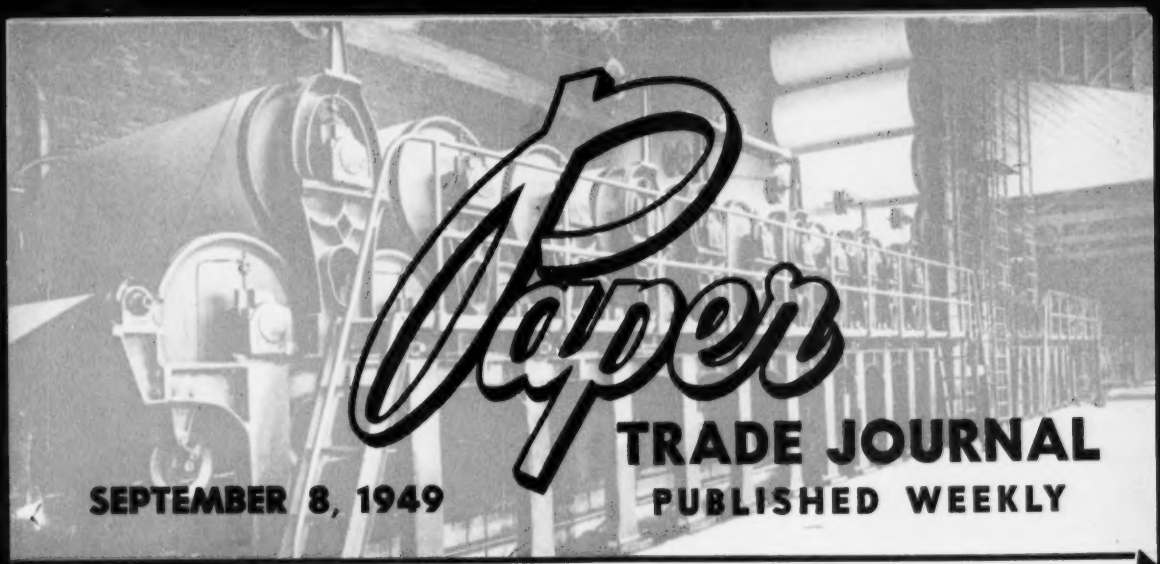

Paper TRADE JOURNAL

SEPTEMBER 8, 1949 PUBLISHED WEEKLY

WOOD PULP

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Established 1886

"Defer not till tomorrow, to be wise . . ."
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Our wood pulp resources are all-inclusive, with Bleached and Unbleached Sulphites, Sulphates and Groundwoods of recognized quality, backed by corresponding high and efficient service standards.

We can be constructively helpful in assisting you to plan successfully for the future.

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A CYLINDER MACHINE VAT SECTION *as long as the height of City Hall, Philadelphia*

Purely imaginative, of course, but it illustrates what all the vats we have built since the end of the war would make if placed side by side. We're conservative in our comparison too, because City Hall, Philadelphia, is 548 feet high to the top of William Penn's hat and the 93 vats would total over 560 feet.

Some of these Downingtown PROFLOW and CONFLOW Vats are for complete machines, making sheets calipering from 9 to 50 points, and the caliper being held to plus or minus ½ point and the weight held to within 2 to 4%. Others are for new liner vats on old machines, to improve coverage with minimum liner usage. Altogether, the vats made, or were added to, a total of 23 machines, one being the "World's Largest Combination Felt and Liner Board Machine" with 10 vats, other big machines being three with 8 vats and three with 7 vats. These 93 vats were built in every possible type of construction.

With our wealth of MODERN cylinder machine designing and building experience at Downingtown, a talk with one of our engineers may convince you that *"you cannot afford to do without the equipment you think you cannot afford to buy right now."* Your problems of quality and production can be discussed and the solution recommended. Call on us.

DOWNINGTOWN MANUFACTURING COMPANY

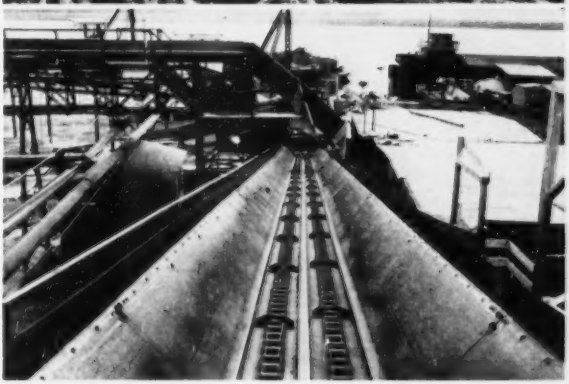
DOWNINGTOWN, PA.

DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY SINCE 1880

TAKES IT AWAY AS FAST AS IT COMES

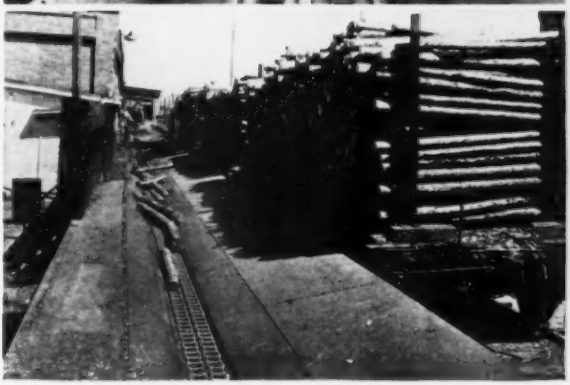
FROM YARD STORAGE

No matter how your pulpwood arrives at the mill, Jeffrey Chain Conveyors provide a very efficient means of taking it away. Hundreds of installations in mills throughout the Pulp and Paper Industry have proven that these sturdy single or multiple strand conveyors can really take it, and day after day, too.



FROM BARGES

Years of experience in designing and building specialized equipment for handling and processing operations in almost every industry has given Jeffrey engineers the knowledge and skill to recommend the right set-up for YOU. If you want to speed production — improve your handling methods . . . call upon Jeffrey. Do it today.



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Complete Line of Material Handling, Processing and Mining Equipment

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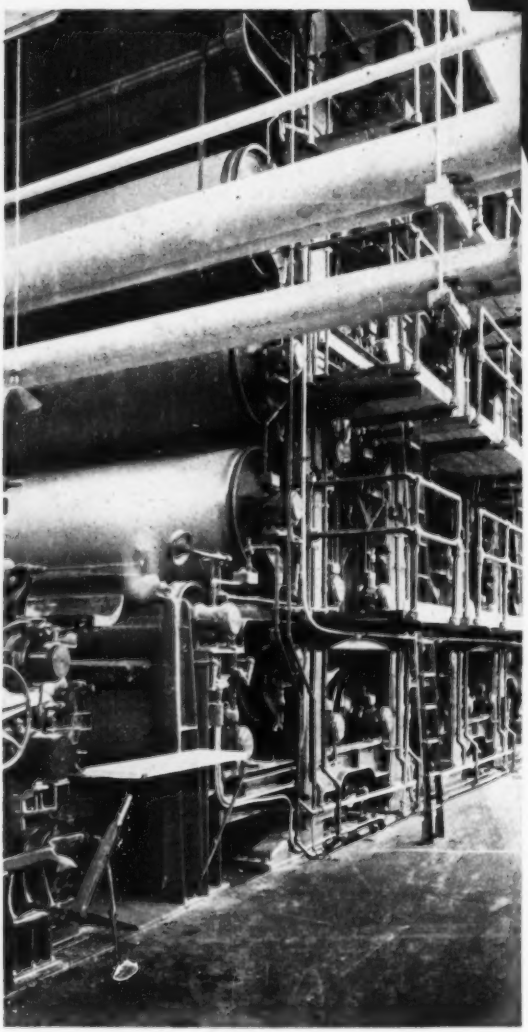

while cleaning circulating systems

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No need to shut down paper machines and lose production in order to clean out sludge, paper dust and water from oil lines and bearings. A relatively small percentage of *Texaco Ursa Oil X*** added to your present lubricant will remove dangerous accumulations without machine slowdown or stoppage.

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Because of its proved success in so many mills, *Texaco Ursa Oil X*** is recommended by leading paper machine manufacturers.

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EVERY THURSDAY

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MEMBER

ABP ABC

SEPTEMBER 8, 1949

In This Issue

	Page
D. W. Ambridge Answers Lumbermen's Charges	12
Rowe Defends Ontario Mills' Position	12
Survey New England Power Needs	16
To Take Ontario Forest Resources Inventory	18
Some Recent Developments in Kraft Recovery	25
Casein in Machine Coating	29
Industrial Production, By Industries	34
Hours and Earnings of Production Workers in Manufacturing Industries	34
Factory Employment and Pay Rolls, By Industries	34

DEPARTMENTS

	Page		Page
Trends	7	Prices	36
Mills	10	Materials	37
Forestry	18	Financial Record	38
Associations	21	Foreign	42
Miscellany	21	Product Development	44
Suppliers	23	Meetings	44
Industrial Development Section	25	Awards	45
Patent Abstracts	30	Imports	45
Equipment	33	Obituaries	47
Supplies	33	Production Ratio Report	48
Literature	33	Classified Advertising	52

INDEX TO ADVERTISERS ON PAGE 62

Paper TRADE JOURNAL

VOL. 129 **NO. 10**

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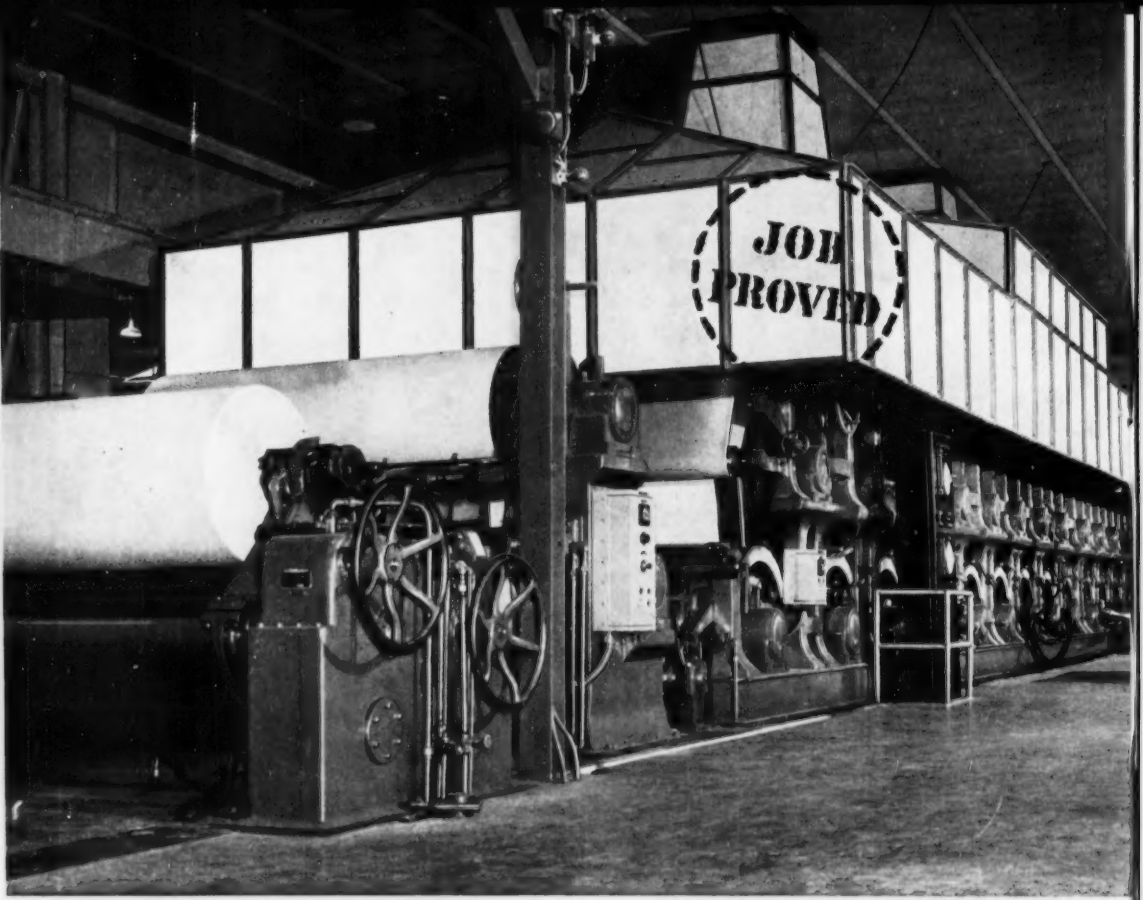

BEARINGS LAST 8 TIMES LONGER

Sun Grease Eliminates Frequent Bearing Failures in Papermaking Machines

A paper mill had trouble with the felt-roll roller bearings on one of its machines. The lubricating greases oxidized and formed heavy sludge deposits. Bearings never lasted more than three months before they had to be cleaned out, repacked, or replaced. Not only did this add heavily to costs, but poor lubrication caused power losses.

Sun engineers were consulted, and a "Job Proved" Sun Roller Bearing Grease was put to work. That was two years ago. Since then, no bearings have had to be replaced because of inadequate lubrication. In fact, a recent inspection showed all of them in such good condition that even the customary cleaning was not necessary.

This is but one case history among many which show the advantages to be gained from use of Sun "Job Proved" Products. For information about how they can help you, get in touch with the nearest Sun Office. The services of a Sun Engineer are available without obligation.

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SUN PETROLEUM PRODUCTS

"JOB PROVED" IN EVERY INDUSTRY

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Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, September 7, 1949.

Beyond the maze of confusing reports on market conditions, the paper and paperboard industry pursues an undisturbed swingback preparatory for a good Fall business. The best guesses on duration of the spurt can not obscure the fact that the volume of orders at the mills shows a tremendous gain over recent months, also that the size of individual orders at the merchant level is notably larger—all of which is good business in the hand. Breadth and depth of the upturn in the industry's 11 divisions is relative: how soft was the supply, how low were inventories, when does normal pickup come.

Recovery Is Spotty

Strongest pickup is in printing papers, where advertising programs are in full swing, and in set-up paperboards for department store and holiday boxes. Both of these segments have been particularly weak all year. Tissue wrappings, also for department store and holiday trade are oversoft in supply; and no stiffening in demand is expected before holiday purchasing that gets underway later in the month. Recovery of kraft wrapping and bag paper was sustained during the week ended August 27 with potential mill capacity reported at 76.0 percent, compared with 74.9 for the week of August 20. Coarse paper dealers report a small upturn in orders; seasonal buying is not yet underway.

Kraft Papers Firm

Firming of the kraft market is seen in the quarter of a cent rise on all grades of kraft wrapping and bag papers announced by producers during the week ended September 3, to become immediately effective. Standard wrapping advanced from $6.25 to $6.50 a hundred in carload lots, f.o.b. mill with varying transportation allowances.

Pulp Market Tone Wavers

Backed by heavy demand of past weeks for all grades of wood pulp, and strong in the knowledge that consumer inventories must now be rebuilt, producers present a firm front on prices.

On the other hand, consuming mills recheck on existing stocks of unbleacheds at domestic mills, as well as Scandinavian, and look for some revisions in fourth quarter prices—minor ones at least.

There also are those who see the recovery as temporary with more general adjustments due. These spokesmen see slight downward adjustments in bleacheds in the cards.

First announcements of fourth quarter levels will break during the week of September 12 on domestic bleached grades, followed by domestic unbleached sulfites, Canadian and Scandinavian prices. Generally, it is said that September 1 freight increases will not be passed along to consumers.

Scandinavian Imports Gain

Latest available data on imports—for the week ended September 3—point up the sizable increase in Scandinavian sales during August. Reported only in bales, no comparative tonnage figures are available. In sulfites, 16,938 bales arrived; in sulfates, 17,248 bales, and in mechanical pulp, 2,184 bales. Of these quantities, 28,135 were consigned to Swedish importers, 5,441 to Finnish, and 610 to Norwegian.

Swedish Inventories

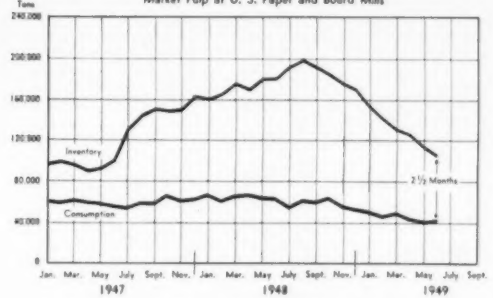
On the basis of 1948's exports, Swedish inventories of unbleached sulfite and unbleached kraft are reported as heavy, at the close of July. Figures include all grades and all types of pulp, however.

Concerning production and stocks, a Swedish journal reported that produc-

(Continued on page 37)

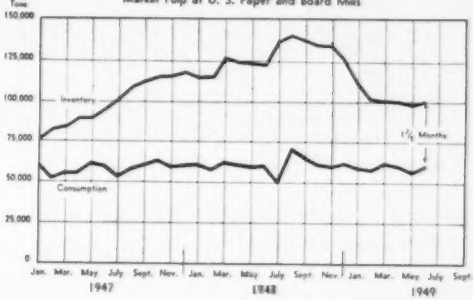
Statistics on market pulp inventories at U. S. paper and paperboard mills through June, 1949. Prepared by Ass'n. of Pulp Consumers, based on data from OIC.

Unbleached Sulphite
Market Pulp at U. S. Paper and Board Mills



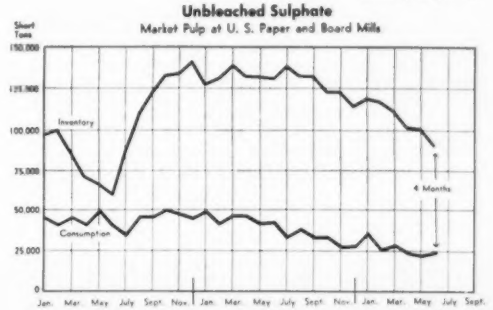
Source: Dept. of Commerce

Bleached Sulphite
Market Pulp at U. S. Paper and Board Mills



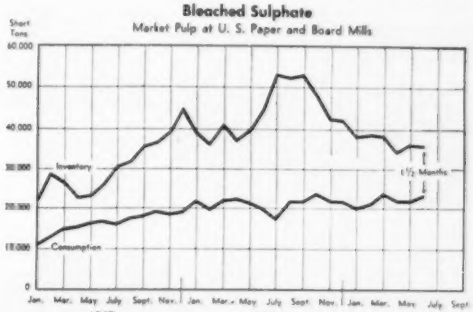
Source: Dept. of Commerce

Unbleached Sulphate
Market Pulp at U. S. Paper and Board Mills



Source: Dept. of Commerce

Bleached Sulphate
Market Pulp at U. S. Paper and Board Mills



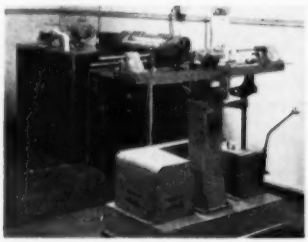
Note: Including Semi-Bleached

Source: Dept. of Commerce

No supplier ever built two identical paper machines. Even though the same set of prints is used the machines differ in more ways than one—each has a personality of its own.

A little closer tolerance here, a little difference in adjustment there—an infinitesimal difference in the bearings—all such variations affect the drag on a felt, its porosity, its term of life.

Thus are posed problems for the felt manufacturer and therein lies the chief reason why Orr keeps in close touch with the mills through trained field representatives.



Orr representatives are always available on call—always ready to lend a helping hand and be of service.

THE ORR FELT & BLANKET CO.
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STANDARD FELTS FOR EVERY MILL REQUIREMENT • ORR-CHEM FELTS (CHEMICALLY TREATED) FOR ALL NEEDS

LET US SYCO-ANALYZE YOUR PLANT

Moore & White has acquired all rights to the famous Syco Drive. It now becomes a logical and major member of our teeming family of fine paper-making machines. The advantages of the Syco Paper Machine Drive are not too numerous to mention; so we'll mention them.

It's safe, and uses only half the space occupied by old-fashioned drives. You have a "clean" mill uncluttered by overhead shafts, pulleys, idlers, countershafts and belts, guards for belts and gears, superstructure, ladders, or catwalks. There is no drive equipment above or below the floor level.

Smooth-running Syco precisely synchronizes sectional speed, preserving uniform tension on the sheet at all times. Better quality control is obtained. Breaks are fewer. Wastage is less. Time-out is minimized. All this boosts production, ups profits.

Our sales engineers are itching to apply Syco efficiency and economy to your machines. Their investigations and ponderings, like all Moore & White surveys, are made gratis and with thoroughness, competence, and enthusiasm. Chances are, when they've made their recommendations, they'll sell you a bill of goods that you'll like.

The MOORE & WHITE Company

15TH STREET AND LEHIGH AVENUE • PHILADELPHIA 32, PA.

CUSTOM-BUILT MACHINES FOR MAKERS OF PAPER AND PAPERBOARD

Paper TRADE JOURNAL

News of the Week

MILLS

Tinker Appraises 75-cent Min. Wage

WASHINGTON — Speaking before a Senate committee session on the 75-cent minimum wage law the last week in August, E. W. Tinker, executive secretary of the American Paper & Pulp Ass'n., told the solons that, "Annual wages to the workers in the pulp and paper industry exceed $650,000,000, and the total annual tax bill approximates $400,000,000. In terms of providing tools for the workers, the investment per worker is conservatively calculated to amount to $20,700."

Mr. Tinker pointed out that only a small segment of the pulp and paper industry is directly affected by the proposed increase in the minimum wage. He mentioned a point most legislators ignored — that a minimum increase means up-grading salaries all along the line. This, Mr. Tinker said, would increase unemployment.

"We all recognize that unemployment in the past several months has increased considerably and in excess of the seasonal pattern," Mr. Tinker's statement continued. "Imposition of a 75-cent minimum will compel many of the high wage-paying businesses to curtail employment, with the displaced workers being forced back into the uncovered segments of the economy in their area, or being obliged to migrate to other areas where it will be impossible to absorb them unless wage rates there should be lowered."

Dismantling Potsdam's Unity Mill

POTSDAM, N. Y.—The Potsdam Paper Mills plant here, formerly known as the Unity Mill, is being dismantled, Nathan H. Grossman, vice-president of the Reading Corrugated Container Co., which owns the mill, reports. Dismantling began on September 2. The machinery will be trucked to Reading, Pa., by the Ruderman Co., of Gouverneur, N. Y. Disposition of the building has not been decided upon.

Lease Oregon Alcohol Plant

WASHINGTON—War Assets of the General Services Administration has leased for five years a wartime experimental industrial alcohol plant at Springfield, Ore., to Charles B. Hudson, Jr., William S. Hudson, and Mrs. W. E. (Ruth D.) Mitchell, all of Americus, Ga.

The lessees propose to rehabilitate and make necessary changes in the plant to determine whether production of industrial alcohol from wood waste is practicable.

Rental for the first three years will be $100 per annum; for the fourth and fifth years on a scale based on the prevailing price of industrial alcohol, with a minimum guaranteed rental of $5,000 a month, payable in advance. The lease also contains an option enabling the lessees to renew for three additional five-year periods or to purchase for an amount to be negotiated.

WAA has made repeated attempts to dispose of the facility, known as the Willamette Valley Wood Chemical Co., but depressed prices for industrial alcohol have prevented it from doing so.

WAA is advised by the lessees that the cost of completing and rehabilitating the entire plant will probably run between $250,000 and $300,000.

The plant was erected to utilize waste products from timber in the manufacture of ethyl alcohol and alcohol by-products by the wood hydrolysis process, successfully employed abroad.

The property is a full-scale commercial expansion of a pilot plant created early in the war at the Forest Products Laboratory of the U.S. Department of Agriculture at Madison, Wis. It was designed to produce industrial alcohol from sawmill waste by the continuous percolation process.

Estimated production of the plant is 4,000,000 gallons per year. It may be modified to become capable of producing large quantities of such by-products as lignin, calcium, sulphate, carbon dioxide for dry ice, furfural, methanol, fusel oil and residual sugars for stocks and poultry feed. WAA stated that the plant may be equipped for the manufacture of wood sugar molasses and partial or large scale production of yeast.

War Assets said that large supplies of sawmill waste are available near the plant at practically hauling cost and that the feasibility of producing industrial alcohol from wood waste has been well established. The facility cost the government approximately $3,000,000.

St. Joe Paper Co. Resumes

PORT ST. JOE, Fla.—The St. Joe Paper Co., has resumed regular eight-hour shifts and a full work week after several months of part-time operations.

Vacations Past, Crane Resumes

DALTON, Mass. — Crane & Co., mills reopened late in August after a two-week vacation shut down.

Board Opposes Wage Hike Plea

MINNEAPOLIS — A wage increase asked for 200 employes of the Minnesota & Ontario Paper Co., of International Falls, Minn., was opposed by the majority of a governor's fact-finding commission on August 27.

The International Ass'n. of Machinists, lodge 760, asked for a ten-cent hourly increase.

The minority member of the commission, Joseph Okoneski, dissented. Other members, N. W. Joubert of Minneapolis and A. J. Egan of St. Paul, contended the steady business decline since the fall of 1948 and the fact that other unions signed contracts without wage increases were principal reasons for their decision.

Newsprint Production Records Set

FORT WILLIAM, Ont. — The local Great Lakes Paper Co., Ltd., mill, on August 25 set two paper-production records; one, said to be a world mark, the other a mill one. Two machines were involved. One turned out 268,053 tons of newsprint in one day for what officials termed a world mark. The previous mark was 262,822 tons. Together, the two machines produced 593,067 tons of newsprint in a 24-hour period to top the previous high of 496,535 established on August 10 as a mill record.

Weighing Arkansas Mill Possibilities

NEW YORK—A site in the vicinity of Clinton, Ark., is rumored to be under consideration for erection of a paper mill by one of the larger producing organizations now operating mills in several other states.

Stellmacher, Rex Chief Chemist

KALAMAZOO, Mich.—Milton H. Stellmacher has joined the Rex Paper Co. as chief chemist. Previously he was associated with the Hercules Powder Co., and before that with the Dow Chemical Co.

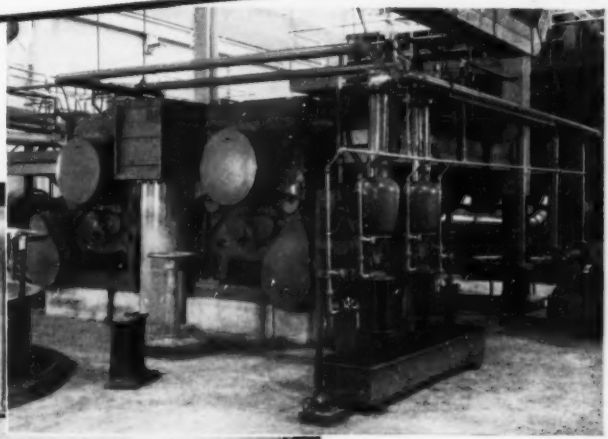
Lovegren Stock Preparation Supervisor

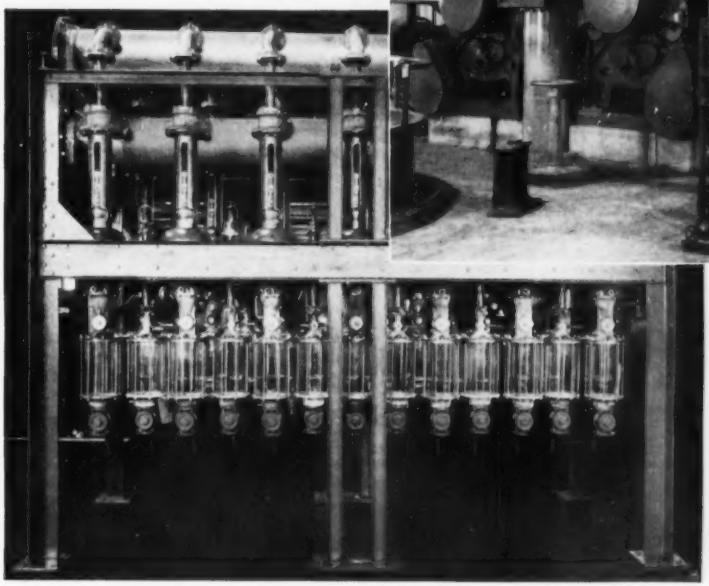
MIQUON, Pa.—Frank J. Lovegren has been transfered from the technical department to the production department of W. C. Hamilton & Sons, and appointed stock preparation supervisor.

Soundview Pulp Co., N. Y. Office

NEW YORK—Soundview Pulp Co., Everett, Wash., has opened a sales office at 122 East Forty-Second street, in charge of Donald Fraser. Telephone, LExington 2-9463.

THE *Cleaner* SHEET GETS THE BUSINESS, TODAY





Now is the time when your paper has to come clean.
Ask us to show you what the proper combination of Screens and Dirtecs can do for your sheet.

To *keep* it clean, keep customers and keep away competition you need:

BIRD SCREENS of adequate capacity to permit the finest screen slots for your grade of stock. A modern Screen installation gets the dirt differing in *size* from the fibres. The fibres are combed out, individualized. Good formation at top machine speed is assured. The stock is delivered free of strings, lumps and slime — uniform in weight.

DIRTECS get the dirt differing in *weight* from that of the fibres and get it out of the papermaking system once and for all. Adaptable to all kinds of stock conditions, dirt conditions and volume needs Dirtecs are easy and economical to install, operate and maintain.

BIRD MACHINE COMPANY
SOUTH WALPOLE • MASSACHUSETTS

D. W. Ambridge Answers Lumbermen's Charges

TORONTO — While the controversy at the head-of-the-lakes over the division of timber limits gradually subsides, D. W. Ambridge, president of Abitibi Power & Paper Co., and of Provincial Paper, Ltd., states in a letter to employes that "Large scale sawmill operations in the Thunder Bay district of Northern Ontario are not economically feasible because there are not sufficient large-sized trees in that area."

"Inasmuch as the well-being of your district and of Canada depends very largely on the continued operation of the pulp and paper industry," Mr. Ambridge writes, in commenting on the publicity received lately on the subject of the lumbering industry's complaint of not having sufficient sawlogs available. "The principal sawmills in Canada which can and do produce lumber economically are all in districts where enough big trees are available. If the cost of producing enough suitable logs in the head-of-the-lakes district is more than the sawmill operators can pay and compete with sawmills elsewhere in Canada, I do not see what the paper companies can do about it. There is no way that I know of to maintain an industry in good health unless it can produce a good product at a price which attracts buyers."

Referring to statements on the budworm problem, Mr. Ambridge stated: "The budworm attacks only the balsam and white spruce in a forest. Very little balsam is used in sawmills and there is only about 8 percent of white spruce in the forest areas at the head of the lakes. I just do not know how the salvage of budworm-killed trees can help the sawmills."

Further on Mr. Ambridge's letter states: "The sawmill operators in their publicity imply that the paper companies are big and that therefore they have succeeded in getting far more wood than they actually need, and that this is, in effect, what they call a 'monstrous monopoly'.

"The reason why the pulp and paper companies are big is that you cannot make paper or pulp cheaply enough to compete in world markets unless you make it in big mills," continued Mr. Ambridge.

"A big mill like Thunder Bay (at Port Arthur), for instance, uses up more than 100,000 cords per year. If this mill is to be able to run, not only this year, but for generations to come, as we hope it will, then there must be set aside for the use of this mill, an area capable of growing 100,000 cords every year.

"The foresters tell us that in this part of the world it takes 2,000 square miles of forest land to support a mill like Thunder Bay.

"That is why paper companies are big, and that is why they must have big limits.

"The competition which is bothering the sawmills is also being felt by the pulp and paper companies.

"As all of you know, the pulp mills of the West Coast are competing fiercely with us here in the East. The West Coast mills have a tremendous advantage in that their wood is so much cheaper than our wood, and this, in turn, is largely because their trees are so much bigger than ours.

"Because of this West Coast competition, pulp prices have been very much reduced and many pulp mills in Ontario are either shut down or are only working part time. So when you hear from the sawmill operators that they are having their troubles remember that your own company has just recently been forced out of the unbleached sulphite market and has had to shut down pulp production at Sault Ste. Marie. Last year, as you all know, we had to stop producing pulp for sale at our Fort William mill and at Provincial at Port Arthur.

"Together with the provincial government, all of us in the Abitibi company are engaged in the great task of maintaining our limits in a continually productive condition so that our mills may have adependable supply of pulpwood and so that the thousands of people who depend on these mills may have steady jobs, decent wages and security in their old age," the letter states.

Rowe Defends Ontario Mills' Position

OTTAWA—There is a sharp difference of opinion over Ontario's timber concession policies between the pulp and paper firms and the timber interests, with this difference being indicated in the latest views expressed by heads of firms of both interests.

Following the statements of Edward E. Johnson, president of the Great Lakes Lumber & Shipping Co., of Fort William, Ont., that "huge concessions" granted pulp and paper firms have excluded lumbermen from an adequate source of raw wood supply and of R. J. Prettie, president of Northern Wood Preservers Ltd., Port Arthur, Ont., that it was economically impossible to operate under current wood supply conditions, W. Earl Rowe, president of the Great Lakes Paper Co., Ltd., of Fort William, has replied that a "premeditated plan" is in progress to discredit both the Ontario Department of Lands and Forests as well as the practices of pulp and paper companies.

Mr. Rowe has gone on record now as stating that his company is carrying out a "sincere salvage program" of budworm-infested areas. In a statement to all employes of the company in Fort William and area, he said that the Great Lakes Lumber & Shipping Co. is engaged in what he termed as "reckless proposals" aimed at the government department as well as the pulp and paper firms. The Lands and Forest Department constantly supervises the long-range plans and practices of the pulp and paper companies, he stated, adding no cutting is allowed until the department approves of it.

Meanwhile, the timber operators are threatening to close down their mills on November 1 unless assured of an adequate supply of raw material, sawlogs and concurrently the Great Lakes Paper Co., Ltd., is said to be planning construction of a sawmill in Fort William.

15 Schoolmen Union Bag Guests

SAVANNAH, Ga.—Fifteen representatives of schools of forestry in the United States who are making a study of forestry in the Southeast, following a visit to the company's forest at Palmetto Bluff and a tour of the woodyard operations of the Savannah plant of Union Bag & Paper Corp., were taken to the Oglethorpe Hotel on Wilmington Island where they spent the week-end, recently.

The group, which is in charge of W. R. Hine of the United States Forestry Service, Atlanta, and D. J. Weddell, dean of the school of forestry, University of Georgia, visited other Union Bag woodland properties at Sapelo forest, near Darien, before inspecting properties of other forest products industries in Florida.

Those spending the week-end in Savannah and who were on the tour of Union Bag properties included:

F. S. Baker, dean of the school of forestry, University of California; George A. Garin of the forestry department, Alabama Polytechnic Institute; C. M. Kaufman, division of forestry, North Carolina State College; W. D. Miller, division of forestry, North Carolina State College; R. S. Ashman, head of the department of forestry, University of Maine; David M. Smith, school of forestry, Yale University; Nat Walker, Oklahoma A. & M. College; E. A. Ziegler, school of forestry, University of Florida; W. M. Palmer, school of forestry, Louisiana State University; R. T. Preston, head of division of forestry, North Carolina State College, and L. L. Glasgow, school of forestry, Louisiana State University.

The touring forestry leaders were guests of Union Bag & Paper Co., at a barbecue at Palmetto Bluff, following which a talk on the company's woodlands operations was made by B. E. Allen, assistant to the manager of the Woodlands division. Members of Union Bag's personnel who accompanied the visitors on their trip through the plant were George Mill, G. E. Jackson and Kirk Sutlive.

Otis No. 11 Resumes

LIVERMORE FALLS, Me.—No. 11 paper machine, at the Otis mill of the International Paper Co., was put into production on August 23.

During the time while this machine was down, repairs were made and a large bird screen was installed. The machine will operate on a schedule of four and one third days a week.

A Commodity? No! It's a Service that is bought by the carload!

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HEADING AND WRAPPING
TUBE WINDING
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Black Water Garden Plots

SPRINGHILL, La.—Approximately 125 persons, guests of the Southern Kraft division of the International Paper Co., here, were recently taken on a tour of experimental garden plots irrigated with "black water."

First stop on the tour was a garden plot presently covered with Dixie 11 corn, turnips, tomatoes and several other vegetables. About one-half acre is in corn and the rest vegetables.

Purpose of the experiments conducted at the plot is to demonstrate that waste water, commonly known as "black water," even with dilution from other water, is harmless to the soil for growing crops. In fact, the water seemed to be beneficial to the crops judging the appearance of plants under cultivation, according to some observers.

Cherry to Memphis for Union Bag

NEW YORK—Arthur Cherry has been appointed sales representative for the Memphis area of the Union Bag & Paper Corp. Mr. Cherry will supervise sales of all Union products except Multiwall bags. Prior to joining the Union organization, Mr. Cherry had over 20 years experience with the Albermarle Paper Mfg. Co., in both manufacturing and selling. Also, he has worked in a sales capacity for Blair Stringfellow Associates.

Hillier, IPC Special Student

MARINETTE, Wis.—Harold W. Hillier, assistant technical director of the Marinette Paper Co., a Scott Paper Co. subsidiary, has been selected by Scott to attend the Institute of Paper Chemistry at Appleton for the 1949-50 school year as a special student. Mr. Hillier joined the Scott technical division in 1938 after graduation from Syracuse University, where he received a B.S. degree in chemical engineering.

Stopping Steam Noises

CHICOPEE, Mass.—E. C. Tucker, vice-president of the Chemical Paper Mfg. Co., Holyoke, on August 24 spoke for the company when he said immediate corrective measures would be taken to stop early morning steam noises at the plant. The move came after residents had complained to Mayor Edward O. Bourbeau about the noises which, they said, disturbed their early morning sleep.

Chaplin, Allied Chicago Area S. M.

KALAMAZOO—Allied Paper Mills has appointed Charles F. Chaplin as sales manager of the Chicago area. Mr. Chaplin was formerly vice-president and sales manager of the Dwight Bros. Paper Co., Chicago. Preceding that he was district sales manager for the Champion Paper & Fibre Co., Hamilton, Ohio.

261 Mills' Frequency Rates

NEW YORK—George J. Adams, chairman of the Joint Safety Committee of the American Paper & Pulp Ass'n., and the American Pulp & Paper Mill Superintendents Ass'n., on August 23 bulletined the membership as follows:

"We want to thank you for your cooperation with the Joint Safety Committee in providing statistics on industrial injuries for the year 1948 within the Paper Industry.

"Herewith is a table which lists without identification the mills which responded to our request and their Frequency rates. (Frequency is the number of lost time injuries per million man hours worked).

"Two hundred and sixty-one mills reported. Of these there were nine which completed the year 1948 without any lost-time injuries, giving them a frequency rate of zero. Sixty-five mills, or 24.9 percent of those reporting, had frequency rates under 10.00, which indicates a very satisfactory experience. Other frequency rates soared to a high of 102.25!

"For the year 1948 the U.S. Bureau of Labor Statistics reported an average frequency rate of 19.3 for the paper and pulp industry. The average for mills replying to our request is 18.01. Therefore, any mill with a frequency rate of 19.3 or less might be considered better than average. On the other hand, when comparing this B.L.S. rate with that of other industries, it cannot be considered a satisfactory rate. To avoid the criticism of maintaining unsafe working conditions in the paper and pulp industry, a marked improvement is needed.

"The Committee wishes to emphasize that the subject of safey should be of primary concern to management and suggests that, particularly in plants where the experience has been unsatisfactory, the situation be approached with a vigorous effort to enlist the interest and cooperation of the entire plant personnel to bring about a substantial reduction of accidents in future experience.

"Meanwhile, this being the initial effort of your committee, we would appreciate your comments on the enclosed report and any recommendations which will assist us in formulating future activities."

261 Mills' Frequency Rates

—as Reported to Joint Safety Committee of the Paper Industry

The following is a report of the Frequency Rates (F.R.) of the 261 mills replying to a request of the Joint Safety Committee of the Paper Industry for the number of man-hours worked and the number of lost time accidents in 1948.

Code No.	F.R.	Code No.	F.R.	Code No.	F.R.	Code No.	F.R.	Code No.	F.R.	Code No.	F.R.
1	0.00	45	6.78	89	14.68	133	20.69	176	30.22	219	40.07
2	0.00	46	6.88	90	14.73	134	21.52	177	30.25	220	40.27
3	0.00	47	7.06	91	14.88	135	22.36	178	30.33	221	40.38
4	0.00	48	6.88	92	14.88	136	22.61	179	30.37	222	41.31
5	0.00	49	7.52	93	14.89	137	22.79	180	30.61	223	42.28
6	0.00	50	7.53	94	14.93	138	23.09	181	30.98	224	43.24
7	0.00	51	7.71	95	15.01	139	23.31	182	31.18	225	43.69
8	0.00	52	8.02	96	15.09	140	23.42	183	31.21	226	44.26
9	0.00	53	8.56	97	15.14	141	23.72	184	31.24	227	45.78
10	1.48	54	9.11	98	15.34	142	24.14	185	31.25	228	46.12
11	1.53	55	9.14	99	15.42	143	24.34	186	31.33	229	46.66
12	2.07	56	9.35	100	15.60	144	24.39	187	31.51	230	47.08
13	2.32	57	9.54	101	15.61	145	24.77	188	31.60	231	47.59
14	2.38	58	9.65	102	15.90	146	24.88	189	31.62	232	48.07
15	2.45	59	9.75	103	16.10	147	24.94	190	31.71	233	48.73
16	2.61	60	9.77	104	16.14	148	24.95	191	31.83	234	50.86
17	2.78	61	9.79	105	16.15	149	25.05	192	31.84	235	51.65
18	2.90	62	9.81	106	16.19	150	25.07	193	32.63	236	53.80
19	2.97	63	9.92	107	16.35	151	25.23	194	32.68	237	55.22
20	3.12	64	9.95	108	16.45	152	25.27	195	32.73	238	56.25
21	3.12	65	9.95	109	16.49	153	25.33	196	33.17	239	56.68
22	3.19	66	10.39	110	16.63	154	25.35	197	33.31	240	57.90
23	3.31	67	10.62	111	16.87	155	25.74	198	33.75	241	58.05
24	3.32	68	10.82	112	17.08	156	26.18	199	34.40	242	58.11
25	3.58	69	10.82	113	17.09	157	26.20	200	34.41	243	59.27
26	4.02	70	11.07	114	17.33	158	26.34	201	34.54	244	60.88
27	4.27	71	11.26	115	17.56	159	26.72	202	34.56	245	64.65
28	4.57	72	11.32	116	17.64	160	26.91	203	34.85	246	64.67
29	4.58	73	11.41	117	17.96	161	27.09	204	35.13	247	65.80
30	4.68	74	11.63	118	18.03	162	27.25	205	35.47	248	67.40
31	4.76	75	11.89	119	18.18	163	27.52	206	35.56	249	68.55
32	4.94	76	12.30	120	18.28	164	27.54	207	35.89	250	71.02
33	5.01	77	12.32	121	18.34	165	27.85	208	35.90	251	78.17
34	5.22	78	12.48	122	18.63	166	27.87	209	36.99	252	79.50
35	5.25	79	12.87	123	18.88	167	27.92	210	36.99	253	80.61
36	5.43	80	12.96	124	18.96	168	28.04	211	37.55	254	81.26
37	5.93	81	13.07	125	18.99	169	28.30	212	37.86	255	84.81
38	6.05	82	13.53	126	19.28	170	28.35	213	37.99	256	85.89
39	6.05	83	13.65	127	19.32	171	28.37	214	38.64	257	86.23
40	6.27	84	13.97	128	19.32	172	28.39	215	39.33	258	95.07
41	6.35	85	14.18	129	20.12	173	28.96	216	39.66	259	95.82
42	6.54	86	14.29	130	20.12	174	29.68	217	39.76	260	98.34
43	6.54	87	14.37	131	20.55	175	29.93	218	39.92	261	102.25
44	6.60	88	14.59	132	20.61						

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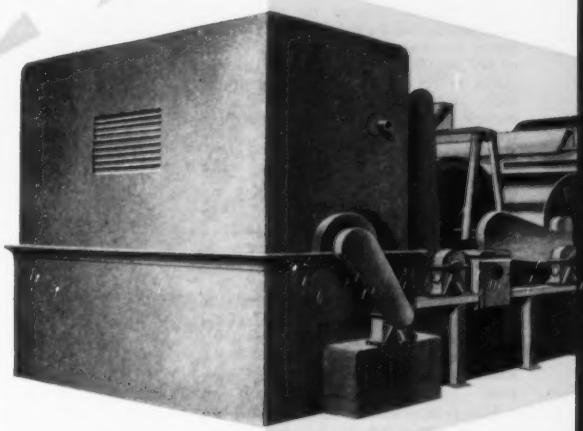

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Survey N. E. Power Needs

WASHINGTON — Power requirements of the paper and allied products industry in the New England states, exclusive of Maine, will reach an estimated billion-plus kilowatt hours by 1955, the Federal Power Commission estimated in a survey of the New England industrial and home power market, just completed.

Maine was excluded from the study, because of a state statutory ban on export of energy from that state. The survey therefore covered the past, present, and future power markets up to 1970, in New Hampshire, Vermont, Massachusetts, Connecticut and Rhode Island, by major industries, and other electric energy users.

The figures showed for the paper and allied products industry in the states covered, an energy consumption of 687,300,000 kwh. for 1945. The data omits reference to other years until 1955, when the estimated electric energy consumption of the industry will reach 1,020,000,000 KWH, and by 1970, an estimated 1,060,000,000 KWH.

Energy purchased from the utilities of the states mentioned, in 1945, by the industry was 344,900,000 KWH. In 1955, this will reach an estimated 470,000,000, and by 1970, an estimated 510,000,000 KWH. The industry itself generated 542,400,000 KWH, less sales, in 1945, and by 1955, will be generating an estimated 550,000,000 KWH, less sales. By 1970, this figure will remain about level with 1945, based on present data of the Commission.

However, the Commission points out that the paper industry is among those that has depended, and will continue to depend largely on power generated by itself, to the extent of some 50 percent.

Among the principal reasons for the early and rapid industrialization of New England was the widespread availability of water power at sites capable of relatively easy development for providing mechanical power, the Commission recalled.

Existing water power developments in the survey area, both utility-owned and industrial, represent an aggregate capacity of nearly 800,000 kilowatts, to which approximately 1,300,000 kilowatts could be added if all potential sites were developed, said the Commission. The report stresses the importance of reforestation in New England, as an industrial asset, to supply needed raw material to numerous wood-consuming manufacturers.

"The region's paper and paper products industry will be aided in regaining lost ground with the carrying out of the long-range New England reforestation program, together with plans for more scientific and rational utilization of available forest resources", the Commission commented. "The region will continue to rely on Canadian pulp for its great variety of finished paper products, however."

The Commission reported that "although the wooded portion of the region is large, the present returns from it are relatively unimportant, a condition capable of betterment with improved forest management."

For privately owned, electric utilities in the United States as a whole, the Commission found, in a separate compilation, that more than $1,700,000,000, net, after retirements, was added to existing plant facilities during 1948.

The Commission also reported that electric utilities produced 23,684,340,000 KWH of energy during July, over the whole country, the highest July production total of record.

Water power plants produced 7,329,785,000 KWH, during the month, 7 percent above production in July, 1948. Water power increased its proportion of energy output from 29.4 percent last year to 30.9 percent this year, it was reported.

Electric utility power plants consumed 19.9 percent less coal in July than a year earlier, and use of gas, at 55,788,373,000 cubic feet, was at the highest monthly consumption figure on record. Fuel oil consumption at 5,477,868 barrels, also set a new monthly record. Coal consumed during July totaled 6,426,979 tons, bituminous and anthracite. All these figures are for the country as a whole.

Bowden Urges Sales Step-Up

CHARLOTTE, N. C. — Speaking before the Charlotte Sales Executives Club on August 26, John D. Bowden, assistant sales manager of the Scott Paper Co., Chester, Pa., emphasized that unprecedented American industrial production and highest quality of salesmanship are essential to national resistance against "the leftist trend." He pointed out that higher standards of living can be attained only through mass production and mass distribution, and that salesmen alone can promote mass distribution.

National industrial output should be increased to a normal level of $200,000,000 per year, continued Mr. Bowden. He estimated that 12,000,000 salesmen would be required to attain distribution of this production. Training of salesmen should begin in the public schools, he insisted.

Tail Race Construction Begun

HOLYOKE, Mass.—Water power generation at Holyoke, began its second century on August 24 as workmen began the initial tail race for the Holyoke Water Power Co.'s new $4,000,000 hydro-electric development. At exercises attended by paper manufacturers Robert E. Barrett, Jr., president of the utility reminded paper mill owners that it was in 1849 that paper manufacturers first got together to harness the water here for power. The tail race will be 2,800 feet long, will vary in depth from 15 to 36 feet. It will be 50 feet wide at the bottom, and will vary in width at the water line from 62 to 126 feet.

Fibreboard Workers Get Service Pins

PORT ANGELES, Wash. — Thirty-two employes of the Port Angeles and Soleduck divisions of Fibreboard Products, Inc., received service pins at a dinner-meeting at the Peninsula Golf and Country Club on August 25.

The pins were awarded in recognition of service ranging from five to 20 years in the plant here or the booming grounds in the harbor.

Among those receiving five year pins were two women, Edna Gehrke and Edith Kirby, who earned their recognition by doing men's work in the plant.

Presiding over the meeting was Manager C. Vernon Basom. Speakers were Robert E. Bundy, general operations manager, San Francisco, and Rev. William Hills, vicar of the Church of the Martyr, Victoria, B. C.

Mr. Bundy, reporting on the corporation's new mill at Antioch, Calif., said one unit is in operation and turning out a good product. The second unit is to start in October.

Guests at the dinner-meeting were C. E. Cox and T. H. Beaune, retired Fibreboard employes, Resident Manager Malcolm Otis of the Crown Zellerbach Corp. newsprint mill, Arthur Poolton and Jack Henson.

Mr. Bason said 54 percent of all employes of the Port Angeles division have service pins denoting five or more years' service, 31 percent have five years pins, 15 percent 10 year pins, 19 percent 15 years, and 35 percent have 20 year pins.

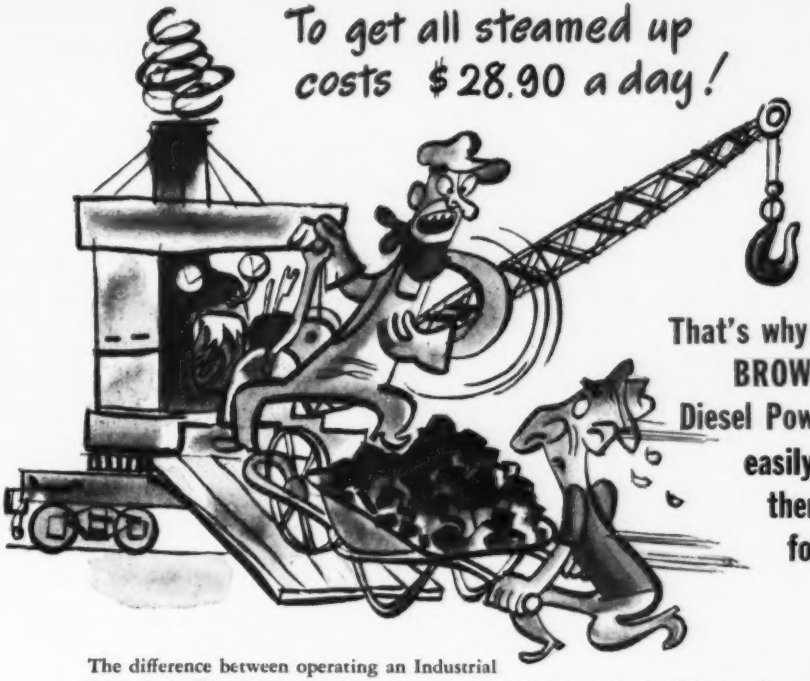
Of the 20-year pin holders, 58 percent have over 25 years' service and 17 percent of the 20-year pin holders have over 30 years' service.

The Port Angeles employes receiving service pins: Five-year pins — W. A. Stanard, Edna Gehrke, Theo. Schmidt, Del Simmons, C. V. Elkhart, Edith Kirby, George W. Adams, Harry Murray, H. E. Price, Fred Bemis, Frank Page, George Bretches. 10-year pins—E. Woodside, N. J. Zimmerschied, Paul Waite, Lee Durham, Jess Hunter. 15-year pins—D. L. Fairchild, Austin Wyman, Harry Lannoye, Claude Leonard, Ralph Simmons, Edwin Wait. 20-year pins—Charles Heckman, Martin Faherty, Lyle Lewis, R. A. Lawrence.

Soleduck division—Emil Johnson and A. N. Hartnagel, 20 years; August Spiegel and Joe Hughes, five years; and Clarence Oars, 10 years.

Elton Warren won the first yearly capital prize for the best suggestion for improvement of mill equipment and Paul Waite the second capital prize. Other winners for suggestions were Harry Zweig, Everett Woodside, Ollie McNeece, L. Dugdale, Stanley Patterson, Ed Anton, D. Fairchild, William Luedke, C. A. Boyd and Henry Jones. The prizes were checks.

Pin awards were made by heads of departments — Emil Johnson, Bert Adams, Jess Bonner, Robert Holcolm, Charles Meagher, Arthur Benson, A. N. Hartnagel and Manager Basom.



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The difference between operating an Industrial Brownhoist Diesel Crane and a steam-operated unit can mean the difference between profit and loss. Look at these typical figures:

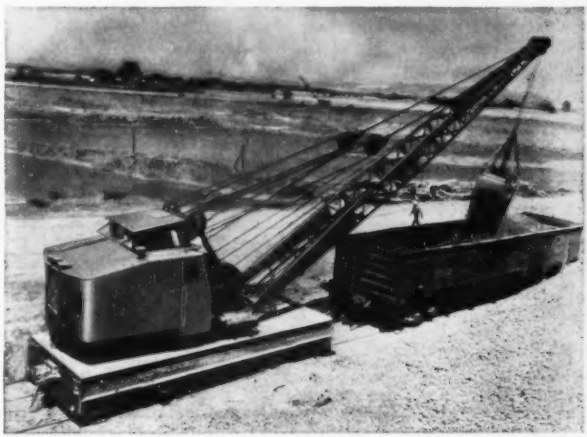
SAVINGS IN FUEL PER DAY	$13.40	(Based on 1½ tons coal per day at $10 a ton, against 16 gallons of fuel oil at 10c a gallon.)
SAVINGS IN LABOR PER DAY	$15.50	(Unproductive firing, banking, cleaning time — 2 hours for engineer at $1.75 per hour, and 8 hours fireman at $1.50 per hour.)
TOTAL FUEL AND LABOR SAVINGS PER YEAR	$7,514.00	

PLUS 65 ADDITIONAL OPERATING DAYS A YEAR!

It takes two hours a day on the average for firing, banking, taking coal and water, boiler washouts, etc. That totals 10 hours weekly, 520 hours annually—or 65 extra days of productive crane time per year.

AND THESE ADVANTAGES:

Safer, cleaner operation; greater production and less operator fatigue because of 360° visibility from monitor-type cab and air operated controls; reduced maintenance time —about half that of steam; elimination of smoke nuisance and fire hazard. Write for complete information.



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Masonite 152-Day Strike Ends

LAUREL, Miss.—Marking the end of a strike that had lasted 152 days, approximately 2,500 hourly rate employes of the Masonite Corp., here, began returning to their jobs on August 30.

Eugene Holland, president of the company, said in Chicago that this action followed acceptance by the union of a new agreement containing substantially the same provisions offered by the company last April. Failure to reach an agreement prior to expiration of the old contract led to the walk-out on April 1. Bargaining agent for employes is International Woodworkers of America, affiliated with CIO.

From the beginning of negotiations, Mr. Holland said, the company sought to clarify the old provisions in regard to functions of management and to broaden and strengthen the clauses covering seniority. He said the new agreement, which will run until December 31, 1950, contains the changes the company advanced early in the negotiations.

The new agreement calls for an increase of two cents an hour in job rates and grants two additional paid holidays, making a total of four.

Part of the union's demands was for 48 hours pay for 40 hours work, plus an increase of 18½ cents an hour across the board.

The new agreement provides for a normal work week of 40 hours.

The company's wage rates, according to Mr. Holland, were approximately four to ten percent higher than those of comparable mills in the area. He also said that common labor is plentiful in the immediate vicinity of Laurel at rates approximately 20 percent less than Masonite's lowest base rate.

Mr. Holland said that, in addition to the company's policy of liberal pay, Masonite for many years voluntarily has provided free hospital and medical facilities for employes and their families. Life and disability insurance is carried at company expense. Two-thirds of the cost of a pension plan is paid by the company. Children of employes are eligible for college scholarships offered by the company.

The hardship brought to employes, as well as the Laurel community and the state, could have been avoided, Mr. Holland said, if the union leadership had gone along with the company's proposal to continue working while negotiating.

$45,000 Forestry Assn. Exhibit

TORONTO — To show visitors how a paper mill operates, the Ontario Paper Co., and the Quebec North Shore Paper Co., set up a scale-model of the complete operation from tree felling to modern paper mill in the Canadian Forestry Ass'n. exhibit at the Canadian National Exhibition, which will run here until September 10. Built at a cost of $45,000, every detail was worked out and carved by hand by Wilfred Tremblay, carpenter-millwright for the Quebec North Shore Paper Co. In the miniature forest, bulldozers are shown at work, trucks move constantly and men stand at the sluices ready to move logs. The exhibit emphasizes conservation methods as practiced by progressive paper mills.

Vance P. Edwardes Now Consultant

CORINTH, N. Y.—Vance P. Edwardes resigned his position as sulphite superintendent of the Hudson River mill, effective September 1, after 20 years with the International Paper Co., of which 14 were at this mill. He is a member of Sigma Xi, TAPPI (of which he is a past president), American Pulp & Paper Mill Superintendent's Ass'n., Inc., Technical Section of the Canadian Pulp & Paper Industry and Hudson River Mill Technical Ass'n., and has authored many published articles dealing with the paper industry. Mr. Edwardes plans to continue his residence at Corinth, where he will be available for consultation.

Oppose Airline Abandonment

HOLYOKE, Mass. — Three paper mills have joined with other industries here in intervening in an application of American Airlines, Inc., for permission to abandon its services from Barnes Airport, transferring all operations to Bradley Field in Connecticut. Officials of American Writing Paper Co., Hampden Glazed Card and Paper Co., and Parsons Paper Co. are protesting the move, which would take the airline's operations about 25 miles from this city.

Sutherland Papermakers K'zoo Champs

KALAMAZOO, Mich. — The city baseball championship of Kalamazoo was won on August 26 by the Sutherland Paper Co. team, the Papermakers. The team, which has won 11 city titles and one state title, advanced to the semi-finals of the American Baseball Congress' Little World Series. The Sutherland nine showed its caliber August 29, when it beat Mike Skaalen, ex-minor league pitcher, and his Holland team, 10 to 3, tagging him for 12 hits.

Kimberly Wins Sawyer Cup

NEENAH, Wis. — John R. Kimberly, vice-president of the Kimberly-Clark Corp., has received the coveted Sawyer Cup at the Oshkosh Yacht Club for setting a new record in Class A competition for the cup. He made the 12-mile course on August 28, in his son's Sea Gull II in one hour, 11 minutes and 42 seconds. The trophy was placed in competition by the late Edgar P. Sawyer of Oshkosh in 1906.

FORESTRY

To Take Ontario Forest Resources Inventory

TORONTO—Pulp and paper companies in Ontario are going to have to reseed their vast forestry holdings in the future to save the billion dollar investment, it was intimated September 1 at Terrance Bay by Hon. Harold Scott, minister of lands and forests for Ontario. Moreover, the end is in sight for the construction of new pulp and paper mills in the province. The only remaining pulpwood limits in the province, a narrow, 500-mile strip north of the Canadian National Ry., line between Sioux Lookout and Hearst, can provide fodder for no more than two or three new plants.

The minister is leading a party of 33 members of the Ontario legislature on a ten-day tour of the northland. He explained that Queen's Park aimed at ending the costly mistakes of the past which have left so much of the northland denuded of sawlogs. A survey, now under way, to be completed in 1953, is designed to prevent similar depletion of Ontario's last remaining forest wealth, the bulk of it suitable only for pulpwood.

To look at a map of the vast unsettled lands of the province north of the C.N.R., can be misleading since only a fraction of this land bears commercial stands of pulpwood. The merchantable timber ends 100 miles beyond the railway, which is Ontario's farthest north, east-west railway, and in some places may peter out 50 to 60 miles north of steel.

Lack of government supervision, it was agreed, permitted timber contractors to cut the bulk of Ontario's sawlogs indiscriminately without re-seeding. Much of the land has been left so long it is now unfit for tree crops.

Mr. Scott said that on completion of the survey each pulp company would be required to adopt a reforestation program, under government guidance, which will guarantee perpetuity for the mills. Companies will have to rotate their cutting over a 100-year period, so as to have fully matured second growth timber ready to cut by the time the first growth is gone.

He explained that this would probably mean considerable juggling of limits held by some firms. The survey is expected to show some mills with more timber than they need and others with not enough. The government will alter leases to balance them up.

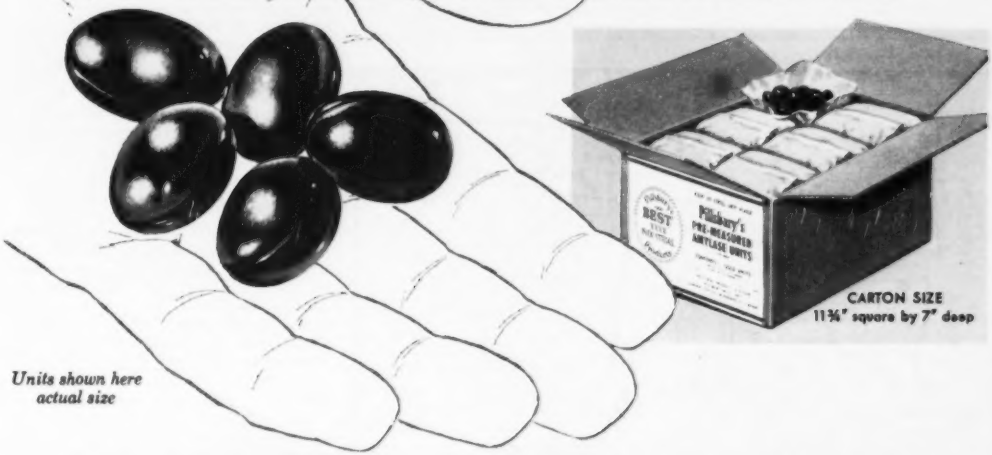
A few companies already have reforestation programs under study and in at least one case, the Spruce Falls Power & Paper Co., Ltd., at Kapuskasing, actually under way. Members of the committee visiting the northland were taken to see this reforestation project. Young two-year-old black spruce seedlings, which in another two years will be ready to put out on their own in cut-over areas of the company's limits, are under way. Spruce Falls experts assert that black spruce makes the best quality newsprint, but natural seeding has proved to be a failure in that region.

Field work on the forestry survey entails mapping of all timber and classifying it into pulpwood and sawlogs. Density of growth, soil conditions and other factors which vary

Revolutionary New Enzyme Development for Coating and Tub Sizing!

Pillsbury's PRE-MEASURED AMYLASE UNITS

PAT. PENDING



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In the preparation of coatings and tub sizings from starch, the new Pillsbury's Pre-Measured Amylase Units offer you—

Simplicity—No more weighing or measuring of enzymes. *Just count* the small number of units required and toss them into the slurry.

Efficiency—Fully protected right up to the moment they are used, these standardized enzyme charges are released at the correct point for greater efficiency.

Economy—Total cost of converting is brought down to very few cents per 100 pounds of starch in the average mill. Measuring and handling losses are eliminated, too.

Accuracy—No more errors in weighing and measuring enzymes. These stable enzyme units retain their potency indefinitely with ordinary care.

Superiority—The enzyme in Pillsbury's Pre-Measured Amylase Units has been selected because of its superior starch-converting properties. It assures end products of maximum adhesiveness and with minimum of specks.

Convenience—Easy to use and store. These units come packed in small cartons, 11¾" square and 7" deep. This compact size permits speedy parcel post delivery, minimum storage space, and enables your plant to operate on smaller inventories.

Write for Full Information—Pillsbury's technical service offers you the experience and technical know-how of men seasoned in the application of enzymes in industry. They are at your service and will cooperate with your organization in running trials without obligation.

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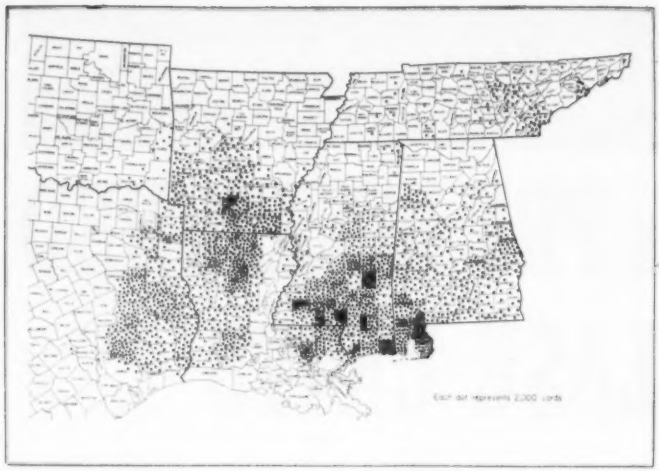

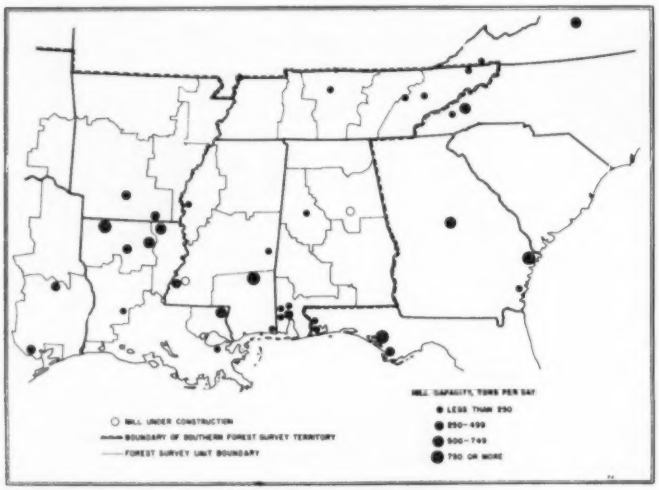

PULPWOOD AND MILLS IN SFS TERRITORY

Upper map shows pulp wood production by counties in Southern Forest Survey territory, 1948. . . Lower map shows location and capacity of pulp mills drawing wood from Southern Forest Survey territory, 1948. . . Pulpwood production in the seven Southern states of Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas, reached another all-time high in 1948. Total production was 5,025,900 cords, an increase of 14 percent over 1947. All of the seven states showed an increase of 14 percent over 1947. Each of the seven states showed increases. . . Pine accounted for 90 percent of the production, or 4,523,000 cords; hardwood accounted for ten percent, or 502,900 cords. These figures were released by Albert L. Tofte and William S. Stover of the Southern Forest Experiment Station, New Orleans. . . The pulpwood produced in Southern Forest Survey territory in 1948 went to 36 different pulp mills. Of these, 25 mills were located within the territory and 11 were outside in Florida, Georgia, North Carolina, and Virginia. . . Southern pulpwood production was about half of the total U. S. pulpwood harvest in 1948. The South also leads the nation in pulpmill capacity. The 55 mills now operating can turn out over 18,000 tons of pulp daily, or about as much as all other regions of the country together. Five of these mills began operation in 1948.

widely in different timber stands must be studied to assess each area. Allowance must be made for fire and insect damage. Areas of sufficient extent, according to the growth, will be allotted to each mill.

Field work on the survey will be completed in two years, but it will take another two years of study to produce a blueprint of Ontario's forestry resources. Mr. Scott said the government is ready to lease remaining limits to new mills between Sioux Lookout and Hearst any time and this action does not need to await completion of the survey.

The probable alternative to reforestation, a newspaper story from Terrace Bay states, is a chain of complete or partial ghost cities and towns, including Fort William, Port Arthur, Kenora, Fort Frances, Iriquois, Espanola, Kapuskasing, Sault Ste. Marie and the glistening new post-war communities of Red Rock, Marathon and Terrace Bay.

Announcement by the national employment service office at Port Arthur, that 7,000 to 8,000 fewer jobs will be available for the coming winter in the lakehead area, doesn't mean lumber and pulp and paper companies are heading into a recession, Mr. Scott said. He attributed the drop in labor demand to the fact that mills have built up to normal their stockpiles of sawlogs and pulpwood, partly depleted in war years when adequate labor in the bush was unavailable. The situation merely means that the companies are back to normal now and are cutting to meet capacity demands only. Cutting during the winters of 1947-48 and 1948-49 had been on an abnormally high scale, Mr. Scott stated, and at a rate far exceeding top annual demands.

Committee Hears Public

DRYDEN, Ont.—The nine-man committee on conservation headed by Fletcher S. Thomas, M.P., heard public representatives state their views on conservation on its two week-tour of northern Ontario. The committee, whose findings are expected to form a basis of government policies towards conservation, reached here on August 29.

In a brief tendered the committee by a Kenora farm organization it was recommended that all land not suitable for farming be replanted to trees and that a clause be inserted in future settlement schemes making it compulsory to cut "clean". The cut-over portions should be replanted every year to insure good forest cover, it was advised.

"It may be that the very existence of what we know as Old Ontario will depend upon the manner in which resources of northern Ontario are preserved. We must adopt conservation as our gospel," the brief warned.

The present controversy between the lumber interests and pulp firms over forest control was heard by the committee when it visited Fort William. One accuser told the legislative group that 13,500 square miles of timber land was infested with the budworm and that salvage of this area was possible. However, the pulp company that controlled this land refused to permit this, he said.

In answer to this charge, Peter Addison, regional forester, drew the committee's attention to the fact that the area in question contained only a small amount of spruce and pine upon which the worm feeds.

ASSOCIATIONS . . .

N. W. Div. Supts. Duluth Meet

DULUTH — The program of the Fall Meeting of the Northwestern Division of the American Pulp & Paper Mill Superintendents Ass'n., Inc., at Hotel Duluth and the Northland Country Club, October 4-5, is as follows:

MEN'S PROGRAM

Tuesday, October 4

10:00 AM, Registration, Hotel Duluth.
12:00 M, Men's Luncheon (Speaker to be announced) Hotel Duluth.
2:00 PM, Program: Kraft Bleaching, Bark Disposal, Digester Corrosion, Groundwood Bleaching, Size Preparation, Sizing of Paper, Hotel Duluth.
6:00 PM, Affiliates Hour, Hotel Duluth.
7:00 PM, Joint Dinner, Hotel Duluth.
10:00 PM, Bowling—Pioneer Alleys.

Wednesday, October 5

9:30 AM, Business Meeting, Arrowhead Room.
11:00 AM, Program: Protective Coatings, Arrowhead Room.
12:30 PM, Men's Luncheon, Northland Country Club.
1:30 PM, Golf.
7:45 PM, Dinner Dance.

LADIES' PROGRAM

Tuesday, October 4

10:00 AM, Registration, Hotel Duluth.
12:30 PM, Luncheon, Flame.
2:30 PM, Auto Tour of Skyline Drive.
7:00 PM, Joint Dinner, Hotel Duluth.

Wednesday, October 5

12:30 PM, Ladies' Luncheon, Northland Country Club.
2:00 PM, Bridge, Northland Country Club.
7:45 PM, Dinner Dance.

Huyck's Glass to Screen Film

MONROE, La. — An extra feature of the convention of the Southern Division of the American Pulp & Paper Mill Superintendents' Ass'n., Inc., to be held here, October 24-26, will be the showing, by Walter Glass of F. C. Huyck & Sons, of a film of the woods operations of the International Paper Co. at Georgetown, S. C. Under the title of "Modern Pulp Wood Mechanization," the film shows barges being loaded at the Wilmington, N. C., dock with gantry cranes; as well as details of equipment operating to load and unload trucks and pick up loose wood in the yard. Land management and fire demonstrations are also featured. The film is in color, and is 2,000 feet in length, Philip J. Hannan, chairman, Southern Division, states.

Paper Exec's Active in AMA

NEW YORK—Paper industry executives active in the affairs of the American Management Ass'n., the 1949 report of that organization, just published, include: F. B. Menger, general production manager of the Armstrong Cork Co., Production Division Council; L. M. Cassidy, vice-president, Johns-Manville Corp., Marketing Division Council; Malcolm S. Black, secretary-treasurer, Union Bag & Paper Corp., and Keith Powlinson, vice-president and controller, Armstrong Cork Co., Finance Division Council; H. W. Heyberger, office manager, Armstrong Cork Co., Office Management Division; and the following among members of the Packaging Division Council:

Frank A. Bisderman, advertising and promotion manager, creped wadding products, Kimberly-Clark Corp.; Neil A. Fowler, director of sales and research, General Box Co.; and Glenn Mather, paper converting division, Continental Can Co.

Members of the Exhibitors' Advisory Committee of AMA's 18th National Packaging Exposition included, among others: Mr. Fowler; Paul Meelfeld, manager, advertising and sales promotion, Hinde & Dauch Paper Co.; Paul Thompson, advertising and sales promotion manager, Sherman Paper Products Corp.; and Ben M. Williams, manager of sales promotion, Gaylord Container Corp.

Salesmen's Ass'n. Fall Metings

NEW YORK—The Salesmen's Ass'n., of the Paper Industry, Eastern Division, will resume its regular noon meetings at Midston House, September 19, October 17, November 21 and December 19.

On September 27 the Association's executive committee will meet in the Chicago offices of the Kimberly Clark Corp., and at noon the Fourth Annual Fall Luncheon will be held at the Stevens hotel, concurrently with the opening of the NSGA Fall Convention.

On October 6 the Eastern Division will hold its Fall Golf Outing at Innis Arden, Old Greenwich, Conn.

Western Division closed meetings are set for September 12 and 19 at Hotel Sherman, Chicago.

AMA Personnel Management Meet

NEW YORK — Paper executives will figure prominently in the Personnel Management Conference under the auspices of the American Management Ass'n., at the Waldorf-Astoria hotel, New York, September 26-28. Lewis H. Brown, Johns-Manville Corp., board chairman, is one of 31 discussion leaders at the conference. Members of the panel discussion on wage and salary administration, foreman relationships, new developments in personnel practices, information surveys and other operating problems of personnel administration include Harrison F. Dunning, general manager of the Scott Paper Co., and Charles E. Swezey of the Armstrong Cork Co. personnel department.

Craigie Seeking Safety Films

NEW YORK—George Craigie, secretary of the American Pulp & Paper Mills Superintendents Ass'n., Inc., recently bulletined members of the Joint Safety Committee of his association and the APPA, as follows: We are attempting to locate films on Safety which are available for loan to other companies to help promote employe interest. If you have any such films and are willing to loan them, please write us, giving name of film and size."

MISCELLANY . . . .

Rains Skip Fired Areas

OTTAWA—Heavy rainfall in many sections of Eastern Ontario and Quebec have been recorded lately but such rainfall has been light in the Gatineau-Lievre areas as well as at Black River and Coulonge districts where fires have been raging, with G. A. Kingston, Lower Ottawa Fire Protective Ass'n., reporting that the light rain has aided in the fight against forest fires in the Gatineau-Lievre areas. He also revealed that at least 25 fires were started by lightning in past few days, though these had been speedily brought under control, even if they were potentially dangerous.

One fire in the 31-Mile Lake area, which caused considerable concern, is now put out, it is reported, though it was not brought under control until it had destroyed two square miles of fine woodlands and hundreds of cords of pulpwood, keeping at least 100 firefighters busy to bring the fire under control.

H. M. Small, Ottawa River Forest Protective Ass'n., said that at Black River and Coulonge areas some 450 men were engaged in fire fighting operations around the clock, aided by three airplanes.

All fires in the Maniwaki area are reportedly under control as a result of the recent rainfall which has been fairly general and heavy.

St. Helens Co. Acquires Acreage

KLAMATH FALLS, Ore.—Deeds and other documents filed for official record here on August 18 disclosed sale of about 28,000 acres of grazing and lodge-pole pine land in northern Klamath county to the St. Helens Pulp & Paper Co.

Internal revenue stamps indicated a consideration of around $100,000.

Another step in the transaction involved return of the land to the sellers for grazing and mining rights only, the lease to extend 99 years.

The area is near Chemult, where the St. Helens company has been taking pine for pulp for the last two years.

Canada Relaxes Export Controls

OTTAWA—The Canadian Government on September 1 relaxed export controls on 27 non-strategic commodities. These items, which previously required individual export approval, may now be shipped out of Canada under general permit. Included are paper and paper products, except building boards.

Chandler, Marcal Ga. D. M.

ATLANTA, Ga.—William D. Chandler has been named district manager in Georgia of the H. Marcal Paper Mills, succeeding Bill Bishop, who has been transferred to other duties.

Re: World Pulp Problem Conference

NEW YORK — The "Report of the Preparatory Conference on World Pulp Problems" covering the meeting in Montreal, last April 25 to May 4, under auspices of the Food and Agricultural Organization of the United Nations, was distributed by the American Paper & Pulp Ass'n. to its membership on September 1. The report bears the following legend on its front cover: "Printed for Canadian Pulp & Paper Ass'n., Montreal, Canada, June 1949." Encompassed in the 58-page report is the following:

Agenda, Preamble, Recommendations, and Conclusions. The latter is subdivided into (A) General Summary, (B) Short-Term Situation, (C) Long-Term Outlook. This is further divided into: (I) General Remarks, (II) Consumer Needs, (III) Production and Requirements, (IV) Raw Materials, (V) World Trade in Pulp, (VI) Production and Requirements by Grades, (VII) Dissolving Pulp. Annexes to the foregoing include the address made by Norris E. Dodd, director general of FAO, at the Conference; Message from Jaime Torres-Bodet, director general of UNESCO; closing address by Marcel Leloup, director, division of forestry and forest products, FAO; statements by participating countries, report of the committee on tropical woods utilization, report of the committee on straw pulp and strawboard; "Pulpwood: Current Consumption and Future Outlook" (FAO statement).

"This report contains information that should be available for consideration by all individuals in the industry concerned with the future outlook with respect to pulp supplies," E. W. Tinker, executive secretary of the American Pulp & Paper Ass'n., told his association's membership when distributing copies of the report. "It should be understood that this was in the nature of a preliminary conference and that in all probability future conferences will be held. However, the information given in the preliminary conference affords some indication of the future outlook."

Newspaper Ad Lineage Drops

NEW YORK—Analysis of apparent gains of 1.6 percent in July newspaper advertising shows five Sundays—the outstanding advertising day for newspapers—compared with four Sundays for July, 1948; and registers a real drop of seven percent. Actual percentage comparisons are reported as: retail, up five percent; general, up 9.6 percent; automotive, up 27.6 percent; financial, down 4.3 percent; classified, down 5.8 percent.

Estimated July consumption of all kinds of newsprint is reported by the ANPA at 396,352 tons, a 6.0 percent gain over July, 1948's, total of 373,906 tons. U.S. supply from Canadian and U.S. mills for the month was 422,983 tons, from Europe, 20,400 tons, for total U.S. supply of 443,383 tons, compared with 440,705 tons in July, 1948.

Michigan State Pulpwood Operations

LANSING, Mich. — The State of Michigan's commercial pulpwood operations which have been conducted in a number of its older pine plantations during the past two years are now beginning to show progress. In a statement on August 26, Norman F. Smith, staff forester of the conservation commission, said yields averaging six cords per acre of jack pine have been removed, and that the remaining stand is still well stocked and in better growing condition. These plantations for the most part were established 1917.

The state's conservation department, having done no reforestation since 1941 due to the war and lack of labor, is resuming this operation this fall. Approximately 3,000,000 seedlings are to be planted on state forest lands in this period. Next spring an equal number is expected to be set out. Subsequent plantings will be somewhat larger for possibly the next ten years, with a planned eight to 12 thousand acres per annum being the ultimate goal.

The success that the U.S. Forest Service has had the past year using aerial spraying with DDT to control jack pine saw fly and spittle bug has influenced the state to consider this technique. In some of the areas where these pests have become a serious problem, the state intends to employ this method next spring or summer.

Sterling Status Cuts Canada

OTTAWA—There is no doubt now that the United Kingdom's shortage of dollars is forcing Canada to lose valuable trade in that market which might have come to this country, with the United Kingdom openly showing preference now to get her needed supplies from sources willing to accept sterling rather than dollars, and this accounting for South Africa, Bechuanaland, Basutoland and Swaziland supplying asbestos products required to make up for the reduced purchases of such products from Canada. In addition, the United Kingdom is cutting to the bone her purchases of timber in Canada and instead she has purchased double timber supplies from Sweden and Yugoslavia, with the understanding being that Polish and German timber supplies may also enter the picture to fill Britain's needs in this respect.

Canadian Carloadings

OTTAWA—Revenue freight loaded on Canadian railways during the week ended August 20 advanced to 3,769 cars of woodpulp and paper as compared with 3,688 cars in the preceding week, though still below the 4,163 cars in the similar week of last year, the Canadian Government reports.

In the Eastern Division, such car loadings rose to 3,299 cars during the week ended August 20 as against 3,207 cars in the preceding week and 3,655 cars in the similar week a year ago. In the Western Division such car loadings dropped to 470 cars in the week ended August 20 as compared with 481 cars in the previous week and 510 cars in the same week last year.

The cumulative total of such car loadings from the first week of 1949 until the week ended August 20 declined to 129,918 cars as compared with 141,452 cars in the similar period of last year. The Eastern Division accounted for 113,422 cars this year, compared with 123,704 cars a year ago and the Western Division for 16,496 cars this year as against 17,748 cars last year.

Liberty Not License

DRYDEN — The Ontario legislature's select committee on conservation was told on August 29 that an individual's right to treat land, water and forests as he pleases must be stopped. The statement was made in a brief submitted by farm organizations in the Kenora district to the nine-man committee. In reading the brief, W. A. Howell of Minnitaki, president of the district agricultural committee, said: "Men will have to reckon it as great a crime to cut down trees wantonly as to commit arson, and as anti-social as to install a sewage system draining into a river or lake or as to assault a child." Farmers suggested that the existence of "old Ontario" might depend on the manner in which the resources of the north and northwest are preserved.

Bonavista Bay Loggers Bogged

OTTAWA — Approximately 1,500 loggers in the Bonavista Bay east coast area of Newfoundland have been thrown out of work on account of the scarcity of lumber contracts, it is reported, with their position being made more difficult this year because generally they are employed during the early summer in the inshore fishery industry and turn to the logging industry in fall and winter, though this year a poor fishing season is aggravating their plight.

Paper Cutters Reclassified

OTTAWA—The Department of National Revenue, Canadian Government, has sent anotice to all collectors of Customs and Excise as well as others concerned" that hand-lever paper cutters, 26½" cutting capacity, have been transferred from the category of "a class or kind not made in Canada" to that of "a class or kind made in Canada".

Plantinga to Johnson & Johnson

NEW BRUNSWICK, N.J.—Dr. Oliver S. Plantinga has joined Johnson & Johnson, as director of cotton and gauze research. He was previously plant manager of the chemical division of the Marathon Corp., Rothschild, Wis.

Gould Rooftop Airmarker

LYONS FALLS, N.Y.—An airmarker will be painted on a rooftop of the Gould Paper Co. as a part of a State wide air safety program to assist pilots in their navigation.

SUPPLIERS . . . . .

Westinghouse Electric Corp., Pittsburgh, has named Henry N. Muller, Jr., heretofore manager of the educational department, as assistant to the vice-president in charge of engineering, with expanded responsibilities in the engineering field. In addition to his new engineering duties, Mr. Muller will continue to direct the educational department. J. C. Fink, formerly manager of the industry engineering department, has been named assistant to A. C. Monteith, vice-president in charge of engineering. In the industry sales department, R. S. Kersh becomes manager of central station sales and F. D. Weatherholt, manager of Industrial Sales. Both will be located at the East Pittsburgh plant.

Brown Instruments division of the Minneapolis-Honeywell Regulator Co., Philadelphia, has named Charles D. McIntire as Cincinnati industrial sales manager succeeding George Brown, who has been assigned to promotion of products of Honeywell's Belfield Valve division. Mr. Brown will supervise Belfield sales in the central states out of Cleveland. John E. MacConville has been named Atlanta industrial sales manager. He will also supervise industrial sales out of Birmingham, Jacksonville and Knoxville. William C. Waltman has been put in charge of industrial sales out of South Bend, succeeding George Gilliam who will supervise pyrometer supplies sales for the company. Previously, Mr. Waltman was with the Syracuse, N. Y., office. Charles E. Sharp has been made Chicago branch industrial manager, succeeding John A. Robinson, who has been named regional sales manager for the Midwest, Northwest, Rocky Mountain and Pacific Coast areas, with headquarters in Chicago.

TRAVELER BACK HOME

J. C. Richards, Jr., manager of international sales for the B. F. Goodrich Chemical Co., has returned from a market survey trip through Japan, Australia, New Zealand, Hawaiian Islands and the Philippines.

KISE TO VA. SMELTING

Dr. Mearle A. Kise has been named director of research and development of the Virginia Smelting Co., West Norfolk, Va. . . . He was formerly assistant chief of research for the Solvay Process division of Allied Chemical & Dye Corp.

J. M. Huber Corp., New York, has appointed the Edward J. Lewis Co., 9 South Clinton street, Chicago, as its representative in Illinois and southern Wisconsin. Sales of Huber channel and furnace carbon blacks, clays and rubber chemicals in that area will be under the direction of Herbert Lewis, who has just returned from a tour of the Huber plants and research laboratories at Borger, Texas; Langley, S.C.; and Huber, Ga.

Fafnir Bearing Co., New Britain, Conn., has developed a series of normal and heavy-duty spherical roller bearing pillow blocks. Spherical roller bearings for these units will be manufactured by the Torrington Co., Torrington, Conn. Fafnir spherical roller bearings pillow blocks will be available in bore sizes ranging from 2-7/16 inches to approximately eight inches. They will be self-aligning, incorporating either felt or triple metallic labyrinth seals, and units will be built for either straight shaft or adapter type mounting. The new line will be marketed through the same channels of distribution as Fafnir ball bearings and ball bearing pillow blocks. First shipments are scheduled for about January 1.

Chain Belt Co., Milwaukee, has opened a warehouse in conjunction with its expanded facilities for the district sales office at 1611 Dragon street, Dallas, Texas.

Phillips B. Hoyt has been named director of purchases of the American Car & Foundry Co., succeeding A. A. Borgading, who retired August 31 after 42 years of service.

Wm. H. Corwin has been named public relations director of the Taylor Instrument Co.'s., Rochester, N.Y.

Matthew D. Black, assistant control manager, E. I. du Pont de Nemours, Inc., purchasing department, Wilmington, Del., retired on September 1, after 47 years with the firm. He joined du Pont at the age of 13, as an office boy.

SALES PROMOTION MGR.

John H. Faunce, Jr., for the last three years district manager of sales at the Chicago Office of Lukens Steel Co., Coatesville, Pa., has been named as manager of sales promotion with headquarters in Coatesville.

ROGERS PERFECTS NEW HEAVY-DUTY GRINDER FOR KNIVES UP TO 220 INCHES

A new, heavy duty straight knife grinder 28 feet in length, for end to end precision grinding, has been developed and is now being produced by the S. C. Rogers & Co., 191 Dutton avenue, Buffalo 11, N. Y. . . This massive seven ton model, No. 220, is designed to handle accurately and with equal ease any heavy chipper knife, shear blade, paper cutting knife and doctor blade up to 220" in length. . . Model 220 is equipped with two motors; one of 15-hp to handle the 20" segmental grinding wheel (10-hp motor for 18" wheel, if desired) and the other of three-hp to guide the traverse carriage. . . Extra wide five-inch "V" ways in base and carriage absorb grinding pressures and permit heavy cuts and fast feeds without vibration. . . A powerful jaw clutch transmission starts the table smoothly and moves it steadily. . . The heavily slotted knife bars are 10" wide with wider bars available . . Besides the 220" length, this model is being manufactured in 90", 100", 110" and 134" sizes. . . Grinders for knife lengths of 238" are available on special order. Delivery can be made within eight to 12 weeks of ordering.

An example of chaetomium globosum (cellulose destroying mold) magnified 76 times

There's no money in growing mold!

Mold and bacterial action can play havoc in almost any pulp and paper manufacturing process. Whether these microorganisms grow in lap stock, pulp slush or in some products such as adhesives used in finishing—they can cost you plenty in time and money.

But you can effectively control these losses with Dowicides, Dow's industrial germicides and fungicides. In practically all phases of paper manufacture, Dowicides are recognized as the most valuable form of insurance against mildew and rot. For example, papers used to wrap or package articles high in moisture content have for many years incorporated Dowicides as a protection against mold.

There's no money in growing mold. Investigate Dowicides now! Complete laboratory facilities are maintained by Dow to help you solve your problems. Just contact your nearest Dow office or write direct to Midland.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington
Cleveland • Detroit • Chicago • St. Louis • Houston
San Francisco • Los Angeles • Seattle
Dow Chemical of Canada, Limited, Toronto, Canada

use the Dowicides

Germicides and Fungicides

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND AGRICULTURE

Some Recent Developments in Kraft Recovery

By

T. T. COLLINS, JR. and P. H. WEST*

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Part II—Continued from September 1 Issue

We have studied the variables for the combinations of units and find that, under today's conditions, the black liquor scrubber would be favored by

1. Cheaper salt cake.
2. Lower dust loading from furnace (assuming equivalent efficiencies to those we have determined).
3. Lower power cost.

Variables which would decrease the black liquor scrubber savings at presently determined efficiencies over the cascade, cyclone, or disk evaporators *plus* electrostatic precipitators are

1. More expensive power.
2. More expensive salt cake or make-up.
3. Higher dust loadings.

In addition, if a mill is short of steam or electric power, then the scrubber would load the system more than the cascade plus electrostatic precipitator.

In view of material we have discussed here, it appears that the scrubber is a sound and economically worthwhile development to be considered for mills with fume recovery problems. Since we have used the electrostatic precipitator for comparison, we do not intend any criticism of that equipment because it is technically and economically sound and capable of very high efficiencies of dust removal. One great advantage that the scrubber has over other methods of dust collection is that it is possible to recapture sulfur dioxide in stack gases and will reduce atmospheric pollution from that standpoint.

Lime Kiln Dust Collector

As mentioned earlier in this paper, our lime kiln formerly lost approximately 10,000 pounds of dust out the stack. Since we needed the sensible heat from these gases to raise our scrubber gas temperature and to reduce condensation in the stack in cold weather, we installed a 25 tube 9VG Multiclone unit and draft fan to clean the lime kiln gases. Over a period of a week's time, we collected an average of 7,000 pounds of dust per day, which is approximately the 70 percent efficiency of dust removal that we expected from our pilot plant data (5). The installation of the Multiclone and its fan has had several beneficial results, as follows:

1. Reduction of fresh lime make-up by the amount of dust collected and reburned is indicated.

2. Due to use of an induced draft fan, higher and more constant draft on the kiln than was formerly obtained from the stack has enabled us to put a greater volume of sludge through the kiln and, whereas the kiln did not previously always reburn all the sludge, there is now more capacity and the kiln is shut down occasionally for lack of sludge.

3. Rings, which were formerly very troublesome, have been reduced somewhat. This apparently is due to more uniform draft on the kiln.

In order to eliminate plugging of the Multiclone tubes, they have chains hanging down through them from the top and the spinning of the gases in the tubes rotates the chains and causes them to scrape the dust off the tube surfaces. A considerable amount of dust builds up at the inlet of the tubes and also in the duct after the unit. Frequent lancing with an air lance is necessary to keep the unit operating. A large amount of the lime dust which is blown out of the exit duct of the Multiclone settles in our stack and has to be shoveled out. The dust collected by the unit falls into a tank where it is made into a slurry with filtrate from the Oliver sludge filter and pumped back to the sludge storage tank. The only maintenance, other than cleaning, required on this unit so far has been replacement of the chains about every 9 months due to their wearing off on the bottom end.

Under the circumstances, the application of the Multiclone for collecting the lime dust has justified itself in helping to alleviate a serious dust nuisance. It should be emphasized that the manufacturer of the equipment called attention to the difficulties of the application and the use of the Multiclone for reclaimed lime from a rotary kiln and declined to quote on a commercial installation. The writers, however, being desirous of exploring the possibilities, made a pilot plant study (5) and arranged to make the installation of the full-scale unit on an experimental basis. The results of this experimental, full-scale installation, as will be noted, bore out the predictions of the manufacturer regarding the operation of the equipment. In justice to the Multiclone unit, we can say that we have other applications on which it performs at very high efficiencies without any operating troubles.

Heat Recovery

In addition to the valuable chemicals present in the gases leaving the sulfate recovery furnace, there is a tremendous quantity of heat present which may be utilized eventually. At present, the standard practice is to pass these hot gases at 500 to 700° F. into a cyclone, cascade, or disk evaporator where they peform evaporation and thicken the liquor. The total heat content of the gases is not changed but much of the sensible heat in the gases is converted to latent heat of the moisture evaporated and the gases are cooled. Usually the gases leave the black liquor direct evaporator at 200 to 300° F. with a high dew point, usually in the range of 160 to 180° F. It has been said that the heat in these gases above outside air temperature represents approximately 35 percent of the heat produced by the combustion of the black liquor in the furnace. Although a number of schemes have been suggested for recovering and utilizing the vast amount of low level heat in the stack gases, we have previously mentioned (6) the INKA, Ramén, and Tomlinson-B&W systems since they are representative of the type of installation one would suggest for this purpose. If a mill needs hot water (such as for washing pulp, bleach plant, etc.) a direct saving is easily calculated but, if we look further we may find other places (heating water to go to boiler, papermachines, etc.) where the Btu load on the mill can be reduced. Because the stack gases represent such a large quantity of heat at one point, it appears feasible for a sulphate mill to consider their use together with the gases from the digester relief and blow and from the vapor outlets of the hoods of the papermachines as sources of heat for making hot water.

Reference to Tables I and II will give an idea of the value of the potentially recoverable heat from these stack gases.

Liquor Sulphidity

Probably one of the most important problems which face pulp mill operators today is the maintenance of sulphidity of cooking liquor. It has been recognized for years that there is a disproportionate loss of sulfur, relative to sodium, in the vacuum and disk evaporators, and also from the recovery furnace. Since the excessive sulfur lost is usually in the form of hydrogen sulfide and cannot be econom-

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ically recovered by methods in use today, a deficiency of sulfur results in the system. This deficiency is accentuated when an electrostatic precipitator or a scrubber is installed, since these units return sodium salts to the system containing a lower sulfur to sodum ratio than exists in salt cake. These units generally result in a re-establishment of the mill's average sulfidity at a lower equilibrium point. Some mills, desiring a high sulfidity, are forced to add sulfur to the white liquor or to the furnace. This sulfur requirement may be expensive and in addition prevents the use in normal times of a cheaper source of sodium (soda ash) than is found in salt cake.

Since the hydrogen sulfide in the stack gases cannot be successfully recovered with the equipment in use in kraft mills today, two alternatives remain for maintaining the sulfur balance at the desired level. What that desired level is may vary from mill to mill and the authors do not pretend to be able to prove whether a high or low sulfidity is most desirable for pulping. In general practice a low sulfidity would be from 17 to 22 percent (TAPPI) and a high sulfidity 26 to 30 percent. Probably most mills are operating within the low and high of those two ranges.

Oxidation of Sulphate Black Liquor

Before discussing the most widely used method of maintaining the sulfur balance; i.e., the addition of some form of extra sulfur in addition to the normal salt cake make-up, the idea of preventing the disproportionate loss of sulfur from the system by aerating the weak black liquor and oxidizing the residual sodium sulfide and sodium sulfite in it should be considered.

It has been almost 10 years since M. G. Schmitt of the Thilmany laboratory clearly recognized this problem of sulfur loss and prepared a paper presented at a superintendent's meeting at Madison. Schmitt found that, when black liquor is dried on filter papers and heated, the unoxidized forms of sulfur (sulfide and mercaptans) are driven off or partially converted to oxidized forms. He suggested conversion of the sulfide sulfur to the oxidized form, thiosulfate, by aeration of the black liquor. Unfortunately, the importance of Schmitt's work and ideas was not immediately recognized by the industry.

During the war years, other investigators recognized the possibilities of black liquor oxidation and considerable work was done in Canada and Sweden. Due to technical difficulties in the process equipment, liquor oxidation has apparently not been carried on successfully with full-scale equipment, except in a very few foreign mills and there have been no complete studies of the subject published. Rather than give the bibliographic background of the subject, it is more appropriate at this time to summarize some of the general information on the subject.

What are the claimed effects of black liquor oxidation? In the first place, the disproportionate loss of sulfur relative to sodium is said to be reduced. The sulfur lost as hydrogen sulfide in the vacuum and disc evaporators and furnace is said to be reduced to a negligible quantity. Table 4, in one of the earlier publications (6), shows some data for sulfur losses when either oxidized or unoxidized liquor are burned in the recovery furnace. Since the quantity of sulfur gases is reduced, corrosion in the equipment is said to have been reduced by liquor oxidation. Evaporator tube replacements dropped to almost nothing in one mill for a period of several years operation on only partially oxidized liquor. In another mill, it is believed the use of oxidized liquor has partially eliminated corrosion of the cyclone evaporator. The reduction in hydrogen sulfide content of the stack gases is also said to reduce the odor of the mill to a very great extent.

The fact that much of the sulfur in the black liquor remains in the system and appears in the green liquor as sodium sulfide is said to make possible maintenance of a higher than normal sulfidity, reduced lime consumption for causticizing, and/or the use of an appreciable percentage of caustic or soda ash for make-up chemical in the place of salt cake. These factors should enable us to have better chemical control of the composition of our cooking liquor and should, at the same time, allow considerably more latitude in our choice of make-up chemicals. It appears that black liquor oxidation may soon develop into an important and essential step in the kraft process.

Make-Up Chemicals for Kraft Mills

Since the first commercial application of the sulphate process by C. F. Dahl in Danzig in 1884, a number of sources of make-up chemicals have been suggested and investigated. However, the record of the past shows that, for the most part, no important processes have been found to be economically feasible or technically desirable for the industry in general and today the chief source of the sodium and sulphur remains salt cake (sodium sulphate).

Recently, there has been a revival of interest in methods of adding sodium and sulphur to the kraft chemical cycle in some form, either simultaneously or independently of each other, so as to give finished cooking liquor of the desired ratio of sodium hydroxide to sodium sulphide. Some of the schemes now being studied have been known for many years and, apparently, had their limitations, or they would have found more widespread application. It seems that changing economics and a desire on the part of pulp mill operators for kraft pulping liquor of higher sulphidity have made necessary a reconsideration of the possibilities of the addition of sodium and sulphur make-up chemicals other than salt cake to the sulphate liquors at the various stages of the process.

There appears to have been at one time considerable research activity with respect to the addition of elemental sulphur to soda cooking liquor to aid in the production of a stronger and more easily bleachable pulp. This addition of sulphur was also extended to the kraft process when it was considered desirable to increase the sulphidity of the liquor. In the first case, the amount of sulphur added was small and no attempt was made to carry a high enough sulphidity in the white liquor of the system to compare with that ordinarily used in kraft mills.

Sulphur has been, or is being, added at various stages of the kraft liquor cycle. Early practice was to throw it into the rotary burner or mix it with black ash and feed it into the furnace. Another method was to mix it with the sludge going to the lime reburner. Others have added sulphur directly to the smelt, green liquor, white liquor, and to the cooking charge in the digester. Occasionally, someone rediscovers one of these old processes and uses it. Synthetic salt cake is a good example of that. It consists of soda ash and sulphur sintered together and can be added to the furnace or to the green liquor.

One mill tried to increase the sulphur content of its liquor by passing SO_2 into green liquor in a scrubber. Other tests have concerned the addition of sulphur by blowing SO_2 into the smelt. Sodium sulphite is used in cooking and the waste liquor has been added to kraft liquor for reburning. Of course, there is a limit to the amount of sulphite cooking liquor (sodium or calcium base) that can be added as make-up to the kraft system.

Other make-up chemicals containing considerable excess sulphur have been nitre cake and also gypsum. Both these materials will raise the liquor sulphidity. Various oil refinery slops, such as the sludges resulting from washing petroleum with caustic or sulphuric acid, are also said to be advantageous in raising the sulphur input to the system.

Use of Waste Salt Cake—Sulphuric Acid for Kraft Make-Up

A new source of make-up chemical approximating nitre cake, a liquid containing a large percentage of free sulphuric acid, has recently been used quite extensively in the kraft mill of the Thilmany Pulp and Paper Co. Its usage came about because of an acute salt cake shortage which developed early in 1947, due to a combination of circumstances, and which threatened to curtail many kraft operations. Our position was further aggravated by a Canadian government embargo which was placed on shipments of natural salt cake from Saskatchewan, which at that time was furnishing about 60 percent of our salt cake requirements. It was soon evident that, if we were to continue to operate 7 days a week,

it would be necessary to augment the supply of salt cake available to us with suitable substitutes in addition to expediting the construction of the full-scale Venturi-Scrubber. Some nitre cake and Glauber's salt were available but these also were in short supply and not too satisfactory from the kraft recovery operating standpoint.

About this time, it was recalled that at an earlier date the Ansul Chemical Co., of Marinette had offered us a waste effluent from their methyl chloride production as an additive source of salt cake. This liquid, containing approximately 30 percent Na_2SO_4, 29 percent H_2SO_4, 38 percent water, and 3 percent NaCl was then being sewered

In February of 1947, the possibility of using this effluent to offset the lost salt cake tonnage was investigated and by March the first mill trials were made. The principal problem to be solved was how to handle and transport the strongly acid effluent at a high enough temperature that it would not cool and crystallize in the tanks. The first answer necessarily had to be the easiest and quickest one; it consisted of neutralizing the acid effluent at Marinette with soda ash and transporting the neutralized solution containing 30 percent salt cake and 70 percent water to Kaukauna in a 3,000 gallon iron tank truck trailer. At the mill the neutralized solution of liquid salt cake was pumped from the truck into a steel tank and fed into the concentrated black liquor at the rate of approximately 5 tons of Na_2SO_4 per day or 67 pounds per ton of pulp.

This method was obviously unsatisfactory for two reasons: (1) too much water to be transported since a saturated solution of salt cake at maximum solubility contains almost 70 percent water, and (2) soda ash or other suitable alkali for neutralizing was also critically short at the time.

A second phase of the project was initiated in April, 1947. The acid effluent was trucked to Kaukauna in two wooden 1,500 gallon tanks mounted on a platform trailer and was neutralized by pumping it into an 8,000 gallon iron tank which contained a previously prepared solution of soda ash or its alkali equivalent. The wooden tanks soon began to disintegrate and were subsequently replaced with two 1,250 gallon lead-lined wooden tanks. *Figure 5* shows the equipment used for hauling the "Ansul Acid". The neutralizing tank, a standby black liquor storage unit, was approximately 9 feet in diameter and 20 feet high. It was equipped with a vertical agitator and a pump, both of which were operated while the acid was being added to the alkaline solution. After complete neutralization was accomplished, the solution containing approximately 30 percent salt cake and 70 percent water was added to the black liquor system as previously explained. This method was superior to the first in that the amount of water transported from

Figure 5. Tank truck used to haul Ansul acid.

Marinette to Kaukauna was reduced from 70 percent to 38 percent.

Although these first and second methods of handling the liquid salt cake were necessary to alleviate the salt cake shortage, they were by no means considered efficient or final, principally because the excess water prevented use of large quantities of liquid salt cake in the concentrated black liquor. In November, 1947, the third stage was reached when a 5,500 gallon lead-lined storage tank was provided at Thilmany. It was then possible to bring the acid effluent to the mill and store it in its acid form.

Some doubt existed as to the amount of acid effluent that could be added to the concentrated black liquor because it was expected that the acid would cause some of the solids to precipitate out of the black liquor. Consequently for a time some of the acid was neutralized with suitable alkali before being added to the system. However, after a short while it was found that as much as 400 pounds of acid effluent per ton of pulp could be added directly to the black liquor, without causing too much liquor coagulation. This 400 pounds of effluent was equal to 120 pounds of salt cake on a sodium basis and 294 pounds of salt cake on a sulphur basis. It previously had been found impossible to add any appreciable amount of finely granulated niter cake to the black liquor because of coagulation of the solids and this result was more than was expected. With niter cake, plugging of the spray nozzle had been experienced.

These findings corroborate an experience by Collins a number of years earlier that full sodium make-up to a rotary-type furnace could be successfully carried out with a saturated solution of niter cake. At that time, no complications in operation other than those due to the addition of extra water were observed and the excess sulfuric acid in the niter cake was effective in increasing the sulphidity.

However, continued operation at a high level of Ansul Acid addition was not deemed advisable for several reasons, the principal one being that furnace operation was extremely critical.

We are currently adding approximately 15 tons of raw acid effluent per day for 150 tons of pulp production or 200 pounds per ton of pulp. This represents 60 pounds of salt cake on a sodium basis and 147 pounds on a sulphur basis.

Actually, the extra sulfur added in the form of sulfuric acid above a normal salt cake make-up amounts to approximately 20 pounds per ton of pulp. Against that figure perhaps should be charged some of the sulfur which is released from the concentrated black liquor, when the Ansul Acid is added to it, and goes out the stack as hydrogen sulphide.

During the period July-December, 1947, about 42% of the sodium make-up was derived from the Ansul Acid effluent, 28% from the Venturi Scrubber, and 30% from dry salt cake and niter cake. However, during this time the scrubber operated only about 70% of the time because of frequent changes and additions to the unit. Actually, during the last 8 months of 1947 almost 55% of all the salt cake furnished, exclusive of that reclaimed by the scrubber, came from the acid effluent.

In the first 9 months of 1948, the Ansul Acid effluent furnished approximately 22% (64# of salt cake per ton pulp) of the sodium make-up, the Venturi Scrubber has supplied 44% (128#/ton) and the remaining 37% (99#/ton) has been provided by the addition of dry salt cake, soda ash, and waste soda cooking liquor. The latter liquor resulted from the necessity for cooking our own sodapulp when it was not available on the market.

It is interesting to review the effect of the addition of a large quantity of free sulphuric acid above a normal salt cake make-up on the recovery system chemistry. The following data in *Table III* illustrates the effect on the sulphidity of the white liquor, the alkalinity of the scrubber liquor, and the chemical balance of the make-up between sulphur and sodium.

As the neutralized Ansul effluent was replaced with the acid material, the white liquor percentage sulphidity increased 3 to 4 points; however, after the initial rise in sulphidity an equilib-

Table III

EFFECT OF ADDITION OF ACIDIC ANSUL LIQUOR ON CHEMICAL MAKE-UP BALANCE

Date	Scrubber Liquor pH	Average White Liquor Sulfidity (TAPPI %)	Na_2CO_3 to Scrubber Lbs.	Extra Na_2CO_3 Equiv. in Make-Up Per Day Lbs.	Extra Na_2CO_3 Needed to Balance H_2SO_4 Per Day Lbs.
Period of Addition of Neutralized Ansul Effluent					
11/21	9.0	23	.. ..	4,511	....
11/22	8.8	19	....	1,846	....
11/23	8.9	20	....	1,409	....
11/24	9.2	20	....	4,052	....
11/25	9.2	21	....	3,510	....
11/26	9.0	22	....	3,031	....
11/27	8.9	22	....	1,947	....
11/28	8.6	22	....	2,136	....
11/29	8.9	23	....	3,440	....
11/30	8.9	23	..	3,697	....
1	7.3	23	....	505	....
2	..	23	....	1,195	....
3	9.1	20	....	1,532	....
4	8.7	22	....	928	....
Period of Addition of Ansul Acid Effluent					
5	6.8	22	900	704	....
6	6.3	22	1,900	....	9,629
7	8.0	24	4,000	....	9,629
8	8.8	24	....	....	8,504
9	..	27	100	....	12,665
10	8.5	26	....	....	12,166
11	7.4	26	1,300	....	12,585
12	7.7	26	700	....	2,420
13	6.9	25	1,500	..	9,720
14	8.1	24	....	....	4,369

rium point was reached. With the addition of a large quantity of the Ansul Acid and the increase in sulphidity it became necessary to add soda to the Venturi-Scrubber liquor to maintain its alkalinity which has a tendency to decrease because of the excess sulphur make-up. This change in the character of the scrubber liquor resulted in immediate and considerable corrosion in the entire Venturi-Scrubber, as was previously discussed.

It is of interest to show the change in the composition of the dust and sulphur gases leaving the recovery furnace after the Ansul Acid was added, as compared with a furnace operating with a normal salt cake make-up. Table *IV* gives data covering the gas composition under various conditions.

In the summer of 1946, during our pilot plant tests on the Venturi-Scrubber, we made analyses of the gas ahead of the scrubber (or after the disk evaporators) and Tests 54-A and 60-A give the data for these runs. At that time, we had no stack dust recovery system and our normal salt cake make-up was 291 pounds per ton of pulp.

In the fall of 1947, we erected our pilot plant Venturi Scrubber to operate in parallel with the disk evaporator (ie., take hot gas from the air heater on the furnace) to study the use of black liquor in the scrubber rather than in the disk evaporator. At this time, our chemical make-up contained excess sulphuric acid above a normal salt cake make-up when taking into consideration the alkalinity of the liquor from our full-scale Venturi-Scrubber operating on the stack gases after the disk evaporator. Run 25 was made while using a large nozzle (high production) in the furnace while Run 27 was made while using a small nozzle (low production). Both runs were made using 60 to 65% solids black liquor in the pilot plant Venturi-Scrubber. *A* indicates samples taken ahead of Venturi-Scrubber (pilot plant) and *B* designates samples from behind the pilot scrubber. The total salt cake make-up practically the same during Run 25 and 27, and some dry soda ash was being added to the black liquor. The reason for this is that running a small nozzle in the furnace means low liquor inventory and to build it up a high alkali make-up is maintained. We have noticed that when we run with a large nozzle in the furnace the fume solution from our full-scale Venturi-Scribber stays alkaline at a pH of 8 to 9. When a small nozzle is put in the furnace, the scrubber liquor pH drops to as low as 5.8 unless soda ash is added to the liquor to maintain it at a pH of 8 to 9. This tendency for the full-scale scrubber liquor to go acid has been aggravated by the use of excess sulfuric acid (above a normal salt cake make-up), and low furnace production rates at high salt cake make-up. Indications are that cutting salt cake make-up along with furnace production reduces this tendency of the full-scale scrubber liquor to go acid but this has not been demonstrated conclusively, because the furnace produces more sulfur dioxide at lower production rate than when it is being "pushed."

The data in *Table II*' shows that, with a normal salt cake make-up, the fume contains considerable soda ash (Runs 54-A and 60-A). However, the excess sulfuric acid (Runs 25-A and 27-A) makes a remarkable change in the fume composition to increase the sodium sulphite and thiosulphite to a remarkable extent while simultaneously eliminating practically all of the sodium carbonate. Run 25-A shows that, at high production, hydrogen sulfide is produced in the furnace. Run 27-A shows that at low production sulfur dioxide is produced in the furnace, as well as hydrogen sulfide and that sulfur dioxide reacts with the black liquor in the pilot plant scrubber to release the sulfide. This would also happen to a great extent in the disk evaporator.

Table IV

ANALYSIS OF FURNACE GAS BEFORE AND DURING USE OF ANSUL ACID EFFLUENT

Test	pH of Fume Solution	Chemicals in Gas* Na_2SO_4	$Na_2S_2O_3$	Na_2SO_3	Na_2CO_3	S	H_2S(a)
54-A ..	8.9	1.76	0.01	0.01	0.89	0.09	0.56
60-A ..	8.9	0.97	0.02	0.01	1.52	0.02	0.69
25-A ..	6.9	4.22	0.69	0.77	0.00	0.04	0.48
25-B ..	6.7	0.53	0.01	0.01	0.04	0.03	0.39
27-A ..	2.9	4.32	1.71	0.31	0.00	0.58	0.26
27-B ..	6.6	0.54	0.05	0.01	0.00	0.01	0.44

* Grains/cu. ft. of wet gas at STP (32° F.—29.92" Hg.) based on the sulfur anaylsis.
(a) Includes mercaptans, if any.

It is of particular interest to note from tests 27-A and 27-B that the Venturi-Scrubber operating on black liquor has a remarkably high efficiency in absorbing sulfur dioxide from the stack gases. If we can prevent the production of hydrogen sulfide in the furnace by proper design and operation and avoid the release of hydrogen sulfide in the disk evaporator by the use of a scrubber and oxidation of black liquor, it will be possible to recover almost completely the sulfur in the form of gases now being lost out the sulfate recovery stack. Needless to say, this would give the Venturi-Scrubber a great advantage over the electrostatic precipitator unless the latter unit were preceded by some sort of absorber for the sulfur dioxide.

It is realized that, in our tests, mercaptans, if any were measured as H_2S and no attempt was made to differentiate between them. *(3)*

This change in the dust composition and the resultant lower alkalinity of the scrubber liquor was in itself sufficient to cause increased corrosion in addition to the worsened effect of hydrogen sulphide and sulphur dioxide at lower gas condensate pH values.

During the early part of 1948, it has been difficult to maintain the white liquor sulphidity over 23% because of the addition of large amounts of caustic soda which was used in cooking soda pulp. Approximately 19% of the salt cake, on a sodium basis, has been derived from the soda cook liquors and almost 10% has been added in the form of dry soda ash to the scrubber liquor system.

Because of these large percentages of caustic and soda ash which have been added as make-up, the amount of free sulphuric acid above a normal salt cake make-up, has amounted, during the period of addition, to only about 1000 pounds per day average. This has resulted in an increased alkalinity of the scrubber liquor and there has been some reduction in the rate of corrosion and the soda ash needed to keep the liquor alkaline.

Some of the operating troubles and disadvantages encountered in the use of the Ansul Acid effluent are:

1. When neutralization was necessary, the purchase of suitable alkalies was a difficult one. Included in the list of neutralizers obtained were soda ash, bicarbonate of soda, caustic soda, laundry soda, X-soda, sal-soda, fished salts, etc . Storing and using these various materials was complicated and confusing to the workmen in the mill.

2. All the equipment for handling the acid effluent—lead lined tanks on truck and for storage, Duriron pump, and lead pipes are subject to considerable

corrosion and erosion and the maintenance problems, particularly on the tanks mounted on the truck trailer, has been a serious one. In recent months, the tanks have been rebuilt several times by Thilmany and are not now causing as much trouble as formerly.

3. Undoubtedly, the corrosion has been increased at several points in the recovery system; however, the exact effect of this general corrosion is difficult to evaluate.

From the economic standpoint, the use of Anhul Acid effluent in competition with normally priced salt cake is questionable because of the considerable equipment investment and the high maintenance which are required for its usage, as well as the overall picture of corrosion in the mill.

Nevertheless, it is true that the Ansul Acid enabled us to continue 7 day a week operation of the pulp mill when the production of some mills was curtailed because of the salt cake shortage. It also enabled us to carry a higher liquor sulfidity and all these factors have justified its use.

From the present technical standpoint of mill chemical balance and reduction of atmospheric pollution, the use of excess sulphuric acid or free sulphur, gypsum, etc., does not, at first glance, appear as attractive a means for maintaining sulphidity as does the oxidation of black liquor, together with the use of a Venturi-Scrubber operating on concentrated black liquor.

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Casein in Machine Coating

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Casein has been an important raw material in the paper industry since about 1900 where it functioned as an adhesive in the manufacture of coated paper. Its particular application has been in the converting mills. Since the middle nineteen hundred thirties when machine coating became an established process, a combination of things has retarded the application of casein in the high solids machine coating process.

First, there has been an economic factor involved in the machine coating application of casein. As many of you know, casein is the protein component of skim milk, occurring to the extent of about 2½ lbs. of casein per hundred pounds of milk. To obtain the casein it must be removed from the other milk components by selective precipitation. An economic balance exists between butter, casein, dried milk, cheese, dried whey, and pork. With but few very minor exceptions, all the applications for milk products involve food. When the demand for food is high the available milk is diverted to food products. World War II placed a sufficient demand for food to limit domestic casein production to approximately 20 percent of the prewar high. Prices for casein increased from approximately 12c/lb. to 50c/lb. as the availability decreased. In the readjustment period following the war, our government has been, and is still pursuing a course of economic stabilization by supporting prices of surplus commodities thru government purchase programs. In purchasing skim milk powder the government has at times during the past three years made fluid skim milk for casein production non-competitive and not available. There is some hope from the casein producers point-of-view that policy changes with respect to support prices in the dairy industry will improve the production situation for the paper coater in regard to high quality casein in 1950.

A second important factor has been a lack of know-how relative to the requirements of the machine coating operation in applying casein. Familiarity with the techniques for the application of casein in the papermaking industry has been largely confined to the personnel operating converting plants. As far as my existing records go, it was not until 1945 that serious consideration was given to the problem of applying casein to high solids machine coating. The problem resolved into two parts. The first part was operability. When casein high solids coating "colors" were first formulated, they were found to be too viscous to transfer through the metering, distributing, and applicating arrangements common to machine coating units. The second part can be summarized in the fact that the utility of casein-bonded machine-coated papers could not be measured when they were not being produced. It is self evident that a solution to the "operability" problem must precede any useful information on the "utility" part of the problem. At this time it can be reported that the "operability" problem with casein appears to be solvable. In part, the basis upon which "operability" may be obtained is through an understanding of the rheological properties of coating mixes.

Because the word rheology may be a new one to many of you, a practical concept of its meaning may prove valuable if you are interested in machine coating. Rheology is a classification of facts relating to flow or fluidity. It is a generally understood fact that a material with low viscosity will flow better than a material with high viscosity, and that materials may be classified by viscosity or "thickness." For this reason our early concepts about coating prompted us to consider measures which would make low viscosity casein coatings, i.e. "thin" coating mixes. Study has shown that coating mixes may appear "thin" or "thick," depending upon mechanical factors such as agitation. A common example of this change in viscosity is quicksand. It is easy to get stuck in quicksand, but very difficult to get out. The reason being that you sink into the quicksand relatively slowly and try to get out relatively rapidly. When moved slowly, quicksand has a lower viscosity and is thinner than when moved rapidly. A material of this type has a rheological property called dilatancy and produces very poor coating mixes. Another material, bentonite, is apparently very thick when moved slowly but becomes thin when moved rapidly. A material of this type has a rheological property called thixotropy and coating mixes having the proper amount of this property are very desirable for coating mixes. Although, dilatancy and thixotropy have been mentioned, there are additional rheological phenomena involved in machine coating which our limited time precludes discussing. The significant differences in the operating characteristics of a coating mix may not be apparent from an ordinary examination of the coating mix. The corrective measure to be applied to a defective coating mix is often times very obscure.

The rheological or flow properties of any coating mix are affected by the type adhesive, type pigment, total solids and by a large number of chemicals which may be added in very small amounts. These rheological or flow factors are technical problems which properly should be handled by your technical staff.

The tonnage of casein used in machine coating is lower than can reasonably be expected, based upon its performance in coated paper manufactured prior to the advent of machine coating. Economic factors during the recent critical years are partly responsible. Technical factors relating particularly to operation of the machine coating process were inadequately understood. We believe both the economic and technical phases are on the threshold of solution and will permit taking advantage of the brightness, bonding strength, waterproofness, and printability characteristics of casein in high solids machine coating.

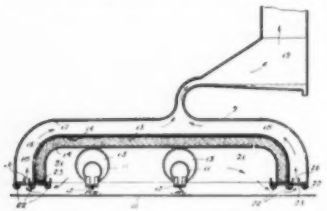
Presented at the American Pulp & Paper Mill Superintendents Ass'n., annual meeting, Atlantic City, June 15-18, 1949.

Patent Abstracts

● ***In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information to our readers are included herein.***

2,464,119 — Moistening Apparatus. Fred C. Dawson, Canton, Mass. Filed Jan. 7, 1947—Issued March 8, 1949.

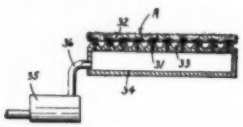
Apparatus for applying moisture to the surface of a sheet, comprising a relatively small steam pipe, said pipe having a nozzle formed in its lower surface for projecting steam from the pipe upon the sheet a relatively large pipe extending around said pipe, means for supplying steam at a relatively low pressure into said small pipe and at a relatively high pressure into said large pipe, a hood having a wall extending over said pipes and having its ends extending downwardly alongside said pipes, said hood having a second wall spaced from said ends, heat insulating material between said walls, said hood



having a third wall spaced from said second wall and forming therewith end passages extending from the hood ends to a common exhaust passage adapted to be connected to the inlet of a fan, said third wall providing for the entry of air into said end passages, and means adjacent the inlets to said passages for heating the air and the steam drawn thereinto.

2,464,301—Textile Fibrous Product. Carleton S. Francis, Jr., West Harwich, Mass., assignor to American Viscose Corporation, Wilmington, Del. Filed Dec. 18, 1943—Issued March 15, 1949.

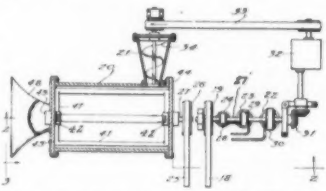
As an article of manufacture, a fibrous product comprising potentially adhesive fibers substan-



tially uniformly distributed therethrough, said product being bonded by fiber-to-fiber adhesion in a group of predetermined areas to thereby reinforce the product as a whole and a second group of areas in the product being bonded to a lesser extent to provide greater porosity than that of the first-mentioned areas, the density and porosity in the second group of areas being substantially uniform throughout the entire thickness of the product at such areas.

2,464,523—Mixer. Carl G. Muench, Glenview, Ill., assignor to The Celotex Corporation, Chicago, Ill. Filed Oct. 4, 1944—Issued March 15, 1949.

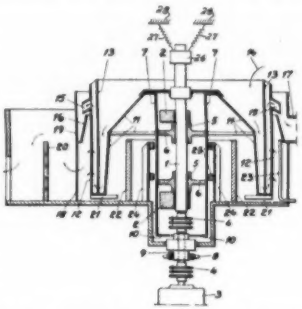
Apparatus for feeding and mixing a setting cementitious slurry and comprising in combination a mixer, feeding devices therefor and closed conduits connecting the feeders to the mixer; the mixer comprising a closed casing, inlets and outlet in said casing and a mixing device operatively mounted therein; the feeders comprising independent force feed measuring devices feeding the



various ingredients, means associated with each feeder independently varying the capacity thereof, means driving the mixing device in the mixer and means driving the feeders as a group but at a speed which is variable relative to the speed of operation of the drive of the mixing device.

2,464,581—Apparatus for Screening Fibrous Suspensions. Nils Walfrid Jönsson, Lidingo, Sweden. Filed May 3, 1945—Issued March 15, 1949.

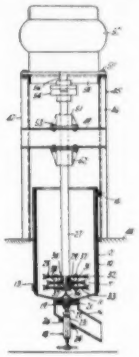
Apparatus for screening, desiccating or washing suspensions of solids, particularly fibrous suspensions, comprising at least one inlet for the suspension and an outlet for the screened material, a rotatable screening member in the shape of a hollow body of revolution having a vertical axis of rotation disposed within said inlet and outlet, a rotatable vertical shaft extending centrally through said rotation body and rigid with said screening member for rotating the same, eccentric members on said rotatable shaft for producing vibrations, when rotating said shaft, and means



for transmitting such vibrations to said screening member, said vibrations taking place in planes located transversely of the axis of rotation of said screening member.

2,464,588—Machine for Dispersing Agglomerated Pigments in Liquids. Percy E. Knudsen and John A. Hanley, Pittsburgh, Pa., assignors to Pittsburgh Plate Glass Company. Filed Aug. 3, 1945—Issued March 15, 1949.

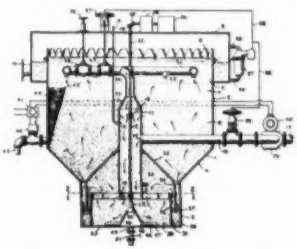
Apparatus for dispersing agglomerates of fine pigmentary particles in a liquid medium comprising a container a shaft rotatable about its longitudinal axis disposed in the container, said shaft carrying a disintegrator head comprising upper and lower discs and an intermediate disc of lesser diameter, the discs being provided with vanes at



their outer peripheries, the vanes having divergent wings backwardly sloping with respect to the direction of rotation of the shaft, the vanes on the upper and lower discs being disposed beyond the outer periphery of the intermediate disc to impact the paste moving outwardly from the vanes on the intermediate disc in order to generate a zone of violent turbulence contiguous to the outer perimeters of the disc.

2,464,617—Water Treating Apparatus. Joseph F. Sebald, Bloomfield, N. J., assignor to Worthington Pump and Machinery Corporation, Harrison, N. J. Filed Feb. 13, 1947—Issued March 15, 1949.

In a water treating apparatus, a receptacle, the upper portion of said receptacle comprising a treated water collection zone and the portion

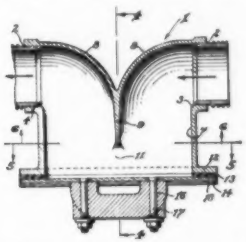


beneath said upper portion including a settling zone wherein foreign material is precipitated from the water; said receptacle having an outlet for treated water communicating with said treated water collection zone; partitions within said receptacle forming a mixing chamber, first and second recirculation chambers, and communicating means for the flow of effluent from said mixing chamber through said first and second recirculation chambers to said settling zone; means for admitting raw water to said mixing chamber; means for admitting chemicals to said mixing chamber; means for admitting slurry to said mixing chamber; an impeller structure having first, second, and third pumping sections; each of said pumping sections being of annular form and having a plurality of flow directing vanes; said pumping sections being concentrically disposed about and driven by a common driving shaft; said pumping sections acting in substantially the same plane; said first and third pumping sections producing flow of the effluent in a direction substantially reverse to the direction of flow produced by said second pumping section; said first

pumping section having its inlet positioned at the outlet of said mixing chamber to receive therefrom effluent comprising water, chemicals, and slurry, said first pumping section discharging effluent into said first recirculation chamber; said second pumping section having its inlet positioned to receive effluent from said first recirculation chamber and its outlet positioned for discharging effluent into said second recirculation chamber, means for guiding part of the discharge from said second pumping section into said settling zone; said third pumping section having its inlet positioned to receive effluent from said second recirculation chamber and its outlet positioned for discharging effluent back into said first recirculation chamber; and means for operating said impeller structure.

2,464,628—Device for Magnetically Trapping Metal Particles. Robert E. Willard, San Francisco, Calif., assignor to Donald E. Stem, San Francisco, Calif. Filed Oct. 20, 1945—Issued March 15, 1949.

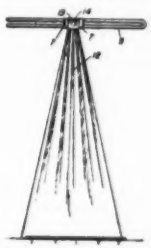
In a magnetic trap of the character described, a closed box having substantially opposite inlet



and outlet adapted to be interconnected into a conduit system, a magnetic bottom on said box between said inlet and outlet, the top wall of said box curving from said inlet and outlet inwardly towards said bottom and being spaced from said bottom at about its middle at a distance smaller than the diameter of said inlet and outlet forming a passage restricted with respect to its height, the opposite sides of said box diverging from said inlet and outlet, and said top being wider at said restricted passage than at said inlet and outlet generally in proportion to the restriction of the height of said passage, the cross sectional area of said restricted passage above said bottom being substantially equal to the cross sectional area of said inlet and outlet.

2,464,657—Device for Stretching, Crimping, and Twisting Crepe Paper. Chester E. Stephenson, Columbus, Ohio. Filed Oct. 16, 1947—Issued March 15, 1949.

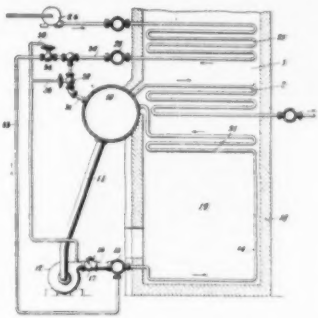
A stretching and shaping device for sheet material comprising a pair of parallel bars inter-



connected at one end on which one end of the material is rolled and a pair of members slidable on said bars adapted to compress the rolled material.

2,464,750—Circulation Control for Boilers. Robert M. Nalven, Kew Gardens, N. Y., assignor, by mesne assignments, to Combustion Engineering-Superheater, Inc., New York, N. Y. Filed March 1, 1944—Issued March 15, 1949.

In a steam boiler having steam generating tubes connected to discharge into a separating



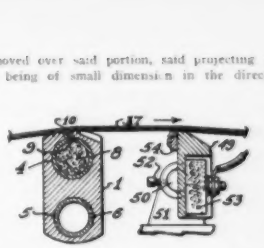
drum to which a circulation pump is connected for supplying said tubes with water taken from said drum, and a second pump connected by piping to supply feed water to said drum; a self-closing valve in said piping; a conduit connecting said piping at a point ahead of the valve therein in the direction of water flow with the admission ends of said tubes; a self-opening valve in said conduit; and means responsive to the normal delivery pressure of said circulation pump for maintaining said self-opening valve closed and said self-closing valve open to prevent feed water from entering said tubes during the delivery of normal pressure by said circulation pump.

2,464,759—Water-Repellent Coating Composition and Method of Coating. Thomas P. Camp, Arlington Heights, Ill., assignor to United States Gypsum Company, Chicago, Ill. Filed March 30, 1945—Issued March 15, 1949.

Process of producing a coating relatively non-wettable by aqueous fluids which comprises applying to a heat resistant article a coating composition consisting essentially of paraffin wax having a melting point or from about 122° F. to about 165° F. and a petroleum-base asphalt having a melting point between about 110° F. and about 185° F. in the relative proportion of from about 1 to about 10 parts of said asphalt to one part of said paraffin wax, heating the coated article to a temperature sufficient to render the coating fluid, and then cooling the article, whereby the paraffin wax becomes distributed in the cooled coating in the form of individual minute particles, some of which, at least, protrude individually from the exposed surface of the coating.

2,464,771—Apparatus for Coating Webs. Louis J. Van Guelpen, Middletown, Ohio, assignor to The Interstate Folding Box Company, Middletown, Ohio. Filed April 9, 1946—Issued March 15, 1949.

In a machine for coating a web with a viscous medium, a coating head having a slot, a tube within said head having apertures in communication with said slot, means for carrying a web over said head and past said slot, and means for forcing said medium under continuous pressure into said slot and against said web, one portion of said head adjacent said slot projecting beyond the confines of said slot, said projecting portion serving to distribute medium on said web as it is moved over said portion, said projecting portion being of small dimension in the direction



of web travel to minimize feathering and stringing, said head having trunnions through which said tube passes, and being tiltable thereon into various angular relationships to said web to vary the thickness of the coating applied to said web, said head and tube being relatively movable to vary the effective areas of said apertures, and means for locking said tube in adjusted position in said head, whereby said head is tiltable without disturbance of said adjustment.

2,464,784—Film Forming Solution of Cellulose Acetate. Russell P. Easton, Binghamton, N.Y., assignor to General Aniline & Film Corporation, New York, N.Y. Filed Aug. 9, 1945—Issued March 22, 1949.

A film-forming solution of cellulose acetate consisting essentially of about 16 parts of cellulose acetate, an organic solvent therefor in an amount suitable for strip casting, about 1 part of trioctyl phosphate, and about 4 parts of triphenyl phosphate.

2,464,786—Floating Roof Tank. John W. Allen, Chicago, Ill., assignor to Chicago Bridge & Iron Company, a corporation of Illinois. Filed November 3, 1945—Issued March 22, 1949.

A storage tank for liquids comprising a substantially cylindrical outer shell and a floating roof therein, said floating roof comprising a substantially circular plate-like structure normally resting on top of the liquid, an upstanding rim around said plate-like structure adjacent the shell, a lowest drain portion located at substantially the center of said plate-like structure and forming a part thereof, a plurality of spaced air-tight pontoons radiating from said lowest drain portion to the rim having their tops substantially level with the top edge of the rim with the tops sloping toward the sides, said pontoons being substantially horizontal with their bottoms formed of said plate-like structure and the areas of said plate-like structure between adjacent pontoons being substantially horizontal and normally bowed laterally upward, and drain channels in the plate-like structure with each drain channel located at a side of one of said pontoons and all drain channels sloping to the lowest drain portions of said structure.

2,464,828—Method of Producing Lignin from Black Liquor. Arthur Pollak, John J. Keilen, Jr., and Lewis F. Drum, Charleston, S. C., assignors to West Virginia Pulp and Paper Company, New York, N. Y. Filed February 22, 1949—Issued March 22, 1949.

In the recovery of lignin from black liquor derived from the pulping of pine wood, the steps of concentrating the said liquor at least to the point at which the saponified resins salt out, allowing such soaps to separate and removing same, scrubbing hot carbon dioxide-containing gas with sufficient water to reduce the gas to below its dew point temperature of not in excess of 150° F. thereby saturating same, then passing the thus saturated gas in a turbulent flow through an absorption tower countercurrent to a flow therein of said liquor thereby to carbonate the liquor without substantial evaporation thereof whereby

precipitation of the lignin and other solids is avoided, removing the thus carbonated liquor from said tower and thereafter coagulating and precipitating the lignin contained therein by heating said carbonated liquor.

2,464,849—Coating Machine. William H. Coward, New Rochelle, N. Y. Filed July 26, 1945—Issued March 22, 1949.

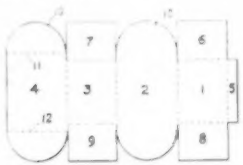
Coating apparatus for applying one or more stripes of coating material to a moving strip, said apparatus comprising spaced vertical standards between which a moving strip is guided, a tubular

support extending between said standards and across the path of the moving strip, said support having a longitudinal row of upwardly disposed openings over which the moving strip passes, a container for coating material mounted for vertical adjustment on the standards above the support, said container having an elongated slot in its bottom which parallels the support and through which coating material is discharged from the container onto the moving strip, partitions supported within the container for adjustment longitudinally of the slot, adjustable means yieldingly supported in each partition for projecting through the slot and engaging the moving strip as it passes over the support to confine coating material discharged through the slot to a restricted area of the moving strip and means to couple the tubular support to a suction line to create a reduced pressure in said row of openings and hold the moving strip against the support during the application of the coating material thereto.

2,465,073—Plasticized Compositions. Bernard A. Dombrow, New York, N. Y., assignors to Nopco Chemical Company, Harrison, N. J. Filed February 6, 1947—Issued March 22, 1949.

A composition of matter which comprises a material of the group consisting of hydrogenated rubber, chlorinated rubber, rubber hydrochloride, polychloroprene and rubbery butadiene polymers; and a quantity sufficient to plasticize said material of a nondrying trimer of the group consisting of the trimers of methyl amyl ketone and methyl hexyl ketone produced by condensing the ketones by means of heat in the presence of a substantially anhydrous strong alkali.

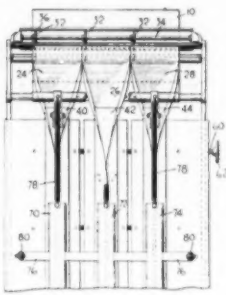
2,465,121—Packing Device for Annular Articles. William A. Ringler, Wayne, Pa., assignor to The Gardner-Richardson Company, Middletown, Ohio. Filed August 14, 1945—Issued March 22, 1949.



A packing and merchandising device for perforated articles comprising a tubed structure formed of flexible material, having a plurality of body walls in articulation, a spaced pair of said walls having articulated flaps at their ends and another spaced pair of said walls extending substantially beyond the ends of the first mentioned pair of walls, so that upon erection of the tubed structure and the bending over of the said flaps, a packing device is provded having a relatively rigid body adapted to extend through the perforated body adapted to extend through the perforated article and a pair of walls the ends of which extend beyond said body and are adapted to lie on either side of the said article.

2,465,044—Apparatus For Making Bags. Harold F. Shumann, Pittsburgh, Pa. Filed June 6, 1945—Issued March 22, 1949.

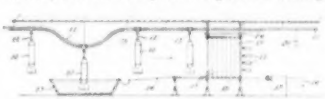
A bag making machine comprising: means for advancing a web of bag material intermittently, means for slitting said web into a plurality of



strips each of proper width to form a tube, a plurality of tube forming mechanisms in side by side relationship and each comprising a pair of gusset-tucking plates, unitary, manually operable means for simultaneously adjusting the members of each pair of plates toward and away from one another said means also simultaneously altering the spacing between adjacent plates of adjacent pairs of plates; means grading each of said strips through one of said tube forming mechanisms to form tubes therefrom, means for simultaneously severing a length from each of said tubes and means for simultaneously sealing the remaining end of each of said tubes.

2,465,128—Method and Apparatus for Electrostatic Coating. William A. Starkey, Zionsville, Ind., assignor, by mesne assignments, to Ransburg Electro-Coating Corp., Indianapolis, Ind. Filed October 31, 1945—Issued March 22, 1949.

In a method of applying a liquid coating to an article, the steps of applying an excess of liquid coating material to the bottom portion only thereof, electrostatically removing excess coating

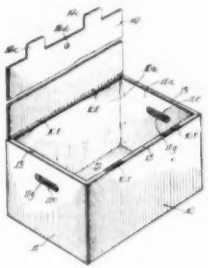


material from the bottom portion of the article by subjecting such bottom portion to the action of an electrostatic field of detearing character creating in such field an upwardly directed air stream carrying finely divided deteared coating material upwardly toward the uncoated portion of the article, and causing such finely divided coating material to be electrostatically deposited on the initially uncoated upper portion of the article by maintaining an electrostatic field of ionizing character thereover.

In apparatus for applying a liquid coating to an article, a support for the article, means for applying an excess of liquid coating material to the bottom portion of the article, an electrode disposed in spaced relation to a partially coated article on said support, said electrode having a detearing section disposed below the article and one or more discharge sections disposed at the sides of the article, means including a source of high-voltage electricity for maintaining an electrostatic field between the electrode and article, and means for introducing finely divided particles of coating material in such field between the article and the discharge electrode-sections.

2,465,324—Fiberboard Shipping Container. Stanley B. De Mian, Chicago, Ill. Filed July 24, 1944—Issued March 22, 1949.

In a fiber-board shipping container the combination comprising a walled body and a preformed pivoted cover member hingedly supported on said walled body, said walled body including



a plurality of wall sections each of which has a rim along the upper edge thereof and with at least one of said wall sections having a plurality of longitudinal slots in the rim thereof, and said preformed cover member including a plurality of tab-hinges corresponding in number to the rim slots of a wall section with each tab-hinge including a foldable ear initially folded for contracting the size of the entire tab-hinge for insertion in a corresponding rim slot and openable after insertion to provide a tab-hinge length greater than the length of the rim slot into which it was inserted, with each tab-hinge retained on the wall section solely by its connection with the rim at the rim slot edge, and said tab-hinges in open position preventing removal of the cover member but permitting the cover member to be pivotally moved to open and to closed position.

2,465,327—Treatment of Ground Wood Pulp. Robert L. McEwen, Williamsville, N. Y., assignor to Buffalo Electro-Chemical Company, Inc., Tonawanda, N. Y. Filed August 1, 1947—Issued March 22, 1949.

The method of producing bleached mechanical wood pulp which comprises first treating the pulp at a pH in the range pH 3.5 to 9 with a solution of a hypochlorite sufficient to produce in the pulp an active chlorine content of 0.1% to 1.75% based on the weight of dry pulp and thereafter with an alkaline peroxide solution to brighten the pulp to the desired degree.

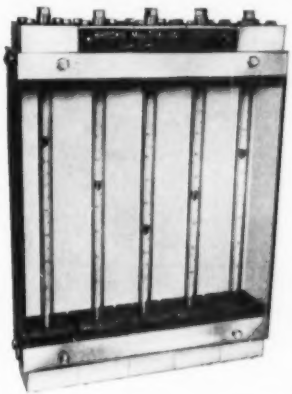
2,465,343—Production of Globular Regenerated Cellulose Particles. Orlando A. Battista, Swarthmore, Pa., assignor to American Viscose Corporation, Wilmington, Del. Filed February 15, 1947—Issued March 29, 1949.

The method of making granular particles comprising regenerated cellulose comprising the steps of allowing droplets of viscose to fall into an acid bath, removing the formed granules of viscose from the bath after a thin skin has been formed thereon as a result of the precipitating action of the acid bath but before gas bubbles are formed within the granules, and regenerating the superficially precipitated granules in a hot substantially non-acid bath of a liquid incapable of dissolving the granules

EQUIPMENT

Multi-Flow Rotameter

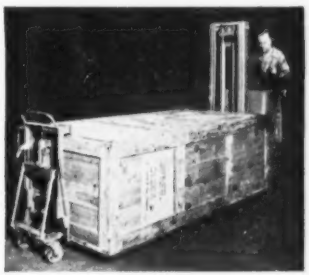
Multi-Flow provides multi-tube rotametering in one shell. Designed for use on related flows as *reflux* and *product* in continuous stills, gas and air flow to atmosphere furnaces, water to battery of coolers, continuous dilution, continuous purging, feeds to parallel



filters, etc. Rotameter and fittings are fastened to a metal back plate with dowel pins. Each tube and end fitting may be removed for cleaning or replacement without disturbing any other parts. Front of unit is shielded with a plastic window ¼ inch thick. For details and prices write to Brooks Rotameter Co., Lansdale, Pa.

Rol-a-Lift

Rol - a - Lift combines a lifting and rolling mechanism in a hand-operated unit for use with fork trucks in moving long, heavily-loaded crates and similar



bulky objects up to 30 feet long. Designed for maneuvering in close quarters where rollers have been required to move loads. Heavy-duty size for loads to 8,000 pounds is 43 ins. high and weighs 200 lbs. Consists of a pair of handles, a pair of forks 5 ins. long and 16 ins. apart, a pair of swivel-type wheels 5 ins. O.D., and a hydraulic lift jack mounted on steel frame. Operator pushes forks under forward end of load and lifts it by means of jack to any necessary height up to 9¼ ins., as power fork truck engages opposite end of load. Swivel wheels of Rol-a-Lift permit load to be steered from the power truck wherever it is to go. For details and prices write to Elwell-Parker Electric Co., Cleveland, Ohio.

High Temperature Swivel Joint

High temperature swivel joints with metallic seal are designed to make possible the fabrication of all-steel lines of unlimited flexibility with the safety and long life of steel throughout. Built in eight different styles for full 360 degree turning in one, two and three

planes, to operate at temperatures to 600°F. and to maximum working pressure of 300 p.s.i. The metallic seal, developed for steam service specifically, is said to be fully effective in both constant and intermittent service, and to reduce operating costs due to leakages. Turning takes place on stainless steel ball bearings designed to carry both radial and thrust loads, to eliminate strain on pipe and fittings, and to assist in absorbing vibration. Available in ¾", 1", 1¼", 1½" and 2" sizes with either threaded or flanged ends. For engineering data and prices, write to Chiksan Co., Brea, Calif.

SUPPLIES

Topflex

Topflex is a heavy-duty, pressure-sensitive printed industrial tape developed for identification and coding of component parts, for warning and instruction labels, for trademark and merchandising labels, for display and advertising purposes, etc. Imprinting is sealed in body of tape so that moisture or abrasion will not deface it. Produced in a choice of six colors with lustrous finish. Tested under actual factory and performance conditions in several industrial plants, it is stated. For details and prices, write to Topflight Tape Co., Huber building, York, Pa.

PN-700

PN-700 is described as a highly-concentrated, surface-active chemical conditioner which increases the penetrating and dissolving power of water by quickly overcoming the water repellence of hard - to - wet materials. By breaking adhesion, a solution of PN-700 and 650 to 1,000 parts of water rapidly penetrates all types of materials and removes oil, glue, resinous deposits, and other sticky and hard-to-remove deposits, it is stated. Developed for a wide range of wetting, saturating, lubricating, sequestering and cleaning procedures, also to step up the strength and speed of alkali detergent and soap solutions for heavy-duty cleaning and degreasing operations. Said to contain no caustic, acid, abrasive or irritating chemicals, also to be non-toxic, completely soluble, and to work well in hot or cold, fresh or salt water. For details and prices write to Service Industries, 2103-05-07 E. Somerset street, Philadelphia 34, Pa.

DC 1107

DC 1107 as a water repellent and rubber release treatment for paper is said to be developing considerable interest in the paper industry since its reduction in price. When properly applied to paper, it produces a surface which is extremely water repellent without changing the appearance of the paper except for slight change in color imparted by the catalyst, the manufacturer states. The emulsion is odorless and is non-corrosive to the metals commonly used in paper mill equipment. It is indicated that there is no loss or bursting strength due to the application of the silicone. The wet strength of the paper is not impaired, but the value of the treatment is in preventing the initial wetting of the sheet. The silicone treatment should give a very desirable water repellent surface to paper used in bags for special applications, the outer facing of box-board or corrugated containers, paper window shades and box liners. The treated paper should also find uses in the rubber industry as a substitute for Holland cloth or as an inter-leaving sheet in die cutting or rubber sheets, the manufacturer states. For revised preliminary information and prices, write to Dow Corning Corp., Midland, Mich.

Sugar Cane Wax

Sugar cane wax has characteristics similar to those of the Carnauba and Ouricury vegetable waxes obtained from Brazil, it is reported. For samples, technical service and prices, write to Warwick Wax Co., Inc., subsidiary of Sun Chemical Corp., 10th street and 44th avenue, Long Island City 1, N. Y.

LITERATURE

Supt. of Documents, U. S. Government Printing Office, Washington 25, D.C. Circular 479 "Unified Screw Thread Standards," 27 large double column pages illustrated with tables and figures. Price 30 cents a copy. Remittances from foreign countries must be in U.S. exchange and includes an additional sum of one-third publication price to cover mailing costs.

Westinghouse Electric Supply Co., Box 25, Wall Street Station, New York 5, N. Y. "Wesco Reporter," Vol. 6, No. 4, July 1949.

Wilkens-Anderson Co., 4525 W. Division street, Chicago 51, Ill. Booklet, "Waco Catalyst," Vol. VIII, 1949. Catalog of Waco products for complete analytical balance service.

INDUSTRIAL PRODUCTION, BY INDUSTRIES

(Without Seasonal Adjustment)

[Index numbers of the Board of Governors, 1935-39 average = 100]

Source: Federal Reserve Bulletin, August, 1949

Industry	1948 June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1949 Jan.	Feb.	Mar.	Apr.	May	June
Paper and Paper Products	*165*	*149*	*165*	*166*	*172*	*170*	*153*	*163*	*158*	*151*	*146*	*144*	*143*
Paper and pulp	160	145	160	160	167	163	149	158	154	148	142	139	138
Pulp	183	170	191	181	194	189	173	189	183	176	167	166	159
Groundwood pulp	107	104	107	103	109	110	107	105	100	102	97	98	95
Soda pulp	111	96	110	107	111	107	104	107	108	106	100	97	80
Sulphate pulp	301	283	328	301	330	317	285	327	309	291	274	273	275
Sulphite pulp	146	135	148	145	153	149	137	145	145	142	135	134	122
Paper	156	141	156	156	163	159	146	153	150	143	138	135	134
Paper board	187	165	184	189	193	195	167	182	174	163	162	162	164
Fine paper[1]	86	74	83	83	...	...	...	...	...	...	...	...	...
Printing paper	168	150	160	161	172	165	160	157	158	155	151	151	141
Tissue and absorbent paper	160	153	161	163	172	162	153	159	163	160	153	141	142
Wrapping paper	145	135	153	148	157	150	142	151	147	138	123	115	117
Newsprint	99	95	99	98	100	99	98	99	98	99	99	101	100
Paperboard containers (same as Paperboard)	...	...	...	...	...	...	...	...	...	...	...	...	...

[1] This series is in process of revision.

NOTE.—For description and back figures see BULLETIN for October 1943, pp. 940-984, September 1941, pp. 878-881 and 933-937, and August 1940, pp. 753-771 and 825-882.

HOURS AND EARNINGS OF PRODUCTION WORKERS IN MANUFACTURING INDUSTRIES

[Compiled by the Bureau of Labor Statistics]

Industry group	Average hours worked per week: 1948 May	June	1949 Feb.	Mar.	Apr.	May	June	Average hourly earnings (dollars per hour): 1948 May	June	1949 Feb.	Mar.	Apr.	May	June
All manufacturing	*39.9*	*40.2*	*39.3*	*39.0*	*38.3*	*38.5*	*38.9*	*1.301*	*1.316*	*1.327*	*1.374*	*r1.374*	*1.373*	*1.380*
Durable goods	*40.1*	*40.5*	*39.9*	*39.4*	*39.0*	*39.0*	*39.3*	*1.366*	*1.385*	*1.459*	*r1.455*	*r1.457*	*1.457*	*1.465*
Nondurable goods	*39.6*	*39.8*	*38.8*	*38.6*	*37.6*	*38.1*	*38.4*	*1.230*	*1.242*	*1.289*	*r1.287*	*r1.285*	*1.286*	*1.291*
Paper and allied products	42.8	42.8	41.4	41.0	40.3	40.5	40.9	1.269	1.292	1.335	1.331	1.330	1.333	1.346

r Revised.

NOTE.—Figures for June 1949 are preliminary. Back figures are available from the Bureau of Labor Statistics.

FACTORY EMPLOYMENT AND PAY ROLLS, BY INDUSTRIES

(Without Seasonal Adjustment)

[Index numbers of the Bureau of Labor Statistics, 1939 = 100]

Industry group or industry	Factory employment: 1948 May	June	1949 Feb.	Mar.	Apr.	May	June	Factory pay-rolls: 1948 Apr.	May	June	1949 Feb.	Mar.	Apr.	May
Paper and Allied Products	*146.5*	*146.9*	*145.4*	*143.6*	*141.4*	*140.4*	*139.9*	*325.7*	*331.1*	*337.8*	*335.3*	*327.6*	*317.0*	*316.3*
Paper and pulp	149	148	147	145	144	143	....	333	343	348	341	332	323	321
Paper goods, n.e.c.	163	164	163	162	160	159	....	351	355	358	381	368	360	365
Paper boxes	132	134	133	130	128	127	....	293	290	305	297	293	280	281

NOTE.—Underlying figures are for pay roll period ending nearest middle of month and cover production workers only. Figures for June 1949 are preliminary. Back data and data for industries not here shown may be obtained from the Bureau of Labor Statistics.

Wheelco Instruments Co., Harrison and Peoria streets, Chicago 7, Ill. Bulletins PC 1, "Panelmount Capacitrol—Indicating Pyrometer Controllers"; P1-1 "Panelmount Instrument Panels."

American Pulpwood Assn., 220 East 42nd street, New York 17, N. Y. Booklet, "American Pulpwood Association; the Story of Its 15 Years of Service to the Pulpwood Industry." A tribute to those who have given time and effort toward building the Association.

Bristol Co., Sales Promotion Dept., Waterbury 91, Conn. Bulletin T842, "Traveling-Oven Recording Thermometer." Describes its use with various types of conveyor ovens to record finishing, lacquering, japanning, drying and baking temperatures. Illustrated with photographs and reproductions of typical chart records.

Brookfield Engineering Laboratories, Inc., Stoughton, Mass. Catalog, "Brookfield Synchro-lectric Viscometer." Sales copy describing various models and applications. Construction details of Typical 4-Speed unit also included.

W. H. & L. D. Betz, Gillingham and Worth streets, Philadelphia 24, Pa. Booklet, "Testing and Control Equipment for Water Analyses." Illustrates and describes complete line of apparatus and test sets designed for industrial water testing.

Cooper Alloy Foundry Co., Hillside 5, N. J. Bulletin, "Corrosion Resistance of Stainless, Monel & Nickel Castings," prepared by N. S. Mott, Chief Chemist and Metallurgist, to aid materials engineers in their selection of the best alloy when the corrosive agents and conditions are known.

Eberbach & Son Co., Ann Arbor, Mich. Bulletin 170, "Eberbach Mercury Still." Sales copy introducing the new unit which is described as "truly automatic."

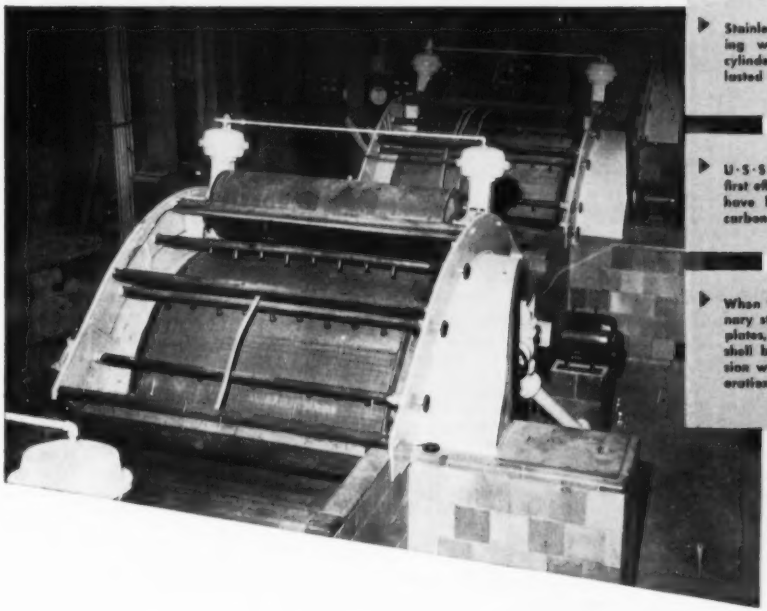
Paisley Products, Inc., 1770 Canalport avenue, Chicago 16, Ill. Pamphlet, "If It's a Job for Adhesives, Put It Up to Paisley." Ten main divisions of basic adhesives are described, and a product list shows end uses and industries served. Illustrations depict technical manufacture and laboratory control methods used in manufacture. Describes also free consulting service for adhesive users.

Tri-Homo Corp., Salem, Mass. Catalog, "Tri-Homo Homogenizers and Dispersers for Better Products." Descriptive sales copy complete with illustrations and specifications.

Who said it costs more to use Stainless Steel?

Consider these facts:

- Digester strainers made of U·S·S Stainless Steel have shown a ten-fold increase in life.
- Stainless Steel wire faces and winding wire in washers, thickeners, cylinder molds and filters have lasted for years instead of weeks.
- U·S·S Stainless Steel tubes in the first effect of a sulphate evaporator have lasted 16 times as long as carbon steel tubes.
- When Stainless Steel replaced ordinary steel in beater bars, and bed plates, in Jordan plug bars and shell bars, corrosion ceased, abrasion was reduced and stock discoloration troubles ended.



The law of survival of the fittest makes Stainless Steel the logical choice for winding and facing wire in this vacuum washer.

STAINLESS STEEL's ability to keep pulp and paper mill equipment longer on the job—to reduce shutdowns for repairs to a minimum—to materially decrease maintenance and cleaning costs, make Stainless Steel for many applications not only the most efficient but, in the long run, actually the *lowest-cost* material you can use.

The thing that gives Stainless Steel a marked *cost-cutting* advantage over other materials is its proved superiority: in resisting the inroads of corrosive attack; in preventing metallic contamination; in resisting erosion, wear and abrasion; and in withstanding extremes of heat and cold. These properties are inherent in the steel—they cannot wear off or chip off with use.

It is not mere coincidence that mills having the best production records are invariably large users of Stainless Steel – and are constantly extending its application. They've found that the difference it makes in performance is *always* greater than any difference in cost that its use may occasion.

In U·S·S Stainless Steels we offer you a complete family of perfected special-purpose steels that will meet almost any requirement of pulp and paper mill service. Our engineers are specialists in its use and will gladly assist you in selecting the proper type to ensure the greatest benefits from its application.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO · CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

II-1677

UNITED STATES STEEL

PRICES

The prices below reflect general market quotations applying to those standard grades in which the normal volume of business is being done.

NEW YORK
Delivered New York

Standard News, per ton—

Rolls, contract	$100.00/	—
Sheets	115.00/	—

F.o.b. Mill, Varying Freight Allowances

Kraft— per cwt., 40# base wgt.

Standard Wrapping Rolls	$6.50/	—
No. 1 Wrapping Rolls	7.25/	—
Standard Bag	6.00/	—

Tissues—per ream 24x36 (480) 10 lbs. 2500 lbs. or more

Wh. No. 1 Frd.	$1.57½/	—
Wh. No. 1 M. G.	155.00/	—
Wh. No. 1½	145.00/	—
Wh. No. 2	105.00/	—
Kraft Anti-Tar	1.37½/	—
Shrd. Wh. No. 1 per lb.	.11½/	—

Toilet— per case of 100 rolls—1 M sheets.

Unbleached 4½x4½	$5.75/	—
Bleached 4½x4½	6.95/	—
Bleached 4½x5	8.80/	—
Per Case of 50 rolls—2000 sheets		
Unbleached 4½x4½	$5.75/	—
Bleached 4½x4½	6.80/	—
Per Case of 100 rolls—1000 sheets		
Facial, 4½ x 5, 2 ply	$8.95/$9.45	

Paper Towels—per case of 3750—Zone 1.

Wh. Jr. M'tif'd 9¼x9½	$5.25
Br. Sr. M'tif'd 10x12	3.60
Br. Jr. M'tif'd 9½x9¼	3.10
Br. Jr. Sgl. fold 10x10¼	3.15
Bkhd. 7½ x 11, 24/25 rolls	$3.95/$6.25

Manila, per cwt.

No. 1 Jute Tag 40 lb., sheets*	$15.05/$17.50	
Reg. Jute M. F. Manila, sheets*	13.50/ 15.50	
Wrapping Manila	8.75/ 10.50	
Printing Manila	10.00/ 11.00	

* Less usual allowance for rolls.

Boards, per ton—

Filled News	$70.00/	—
Plain Chip	70.00/	—
Bkhd. Mla. L-d. Chip*	92.50/	—
White Pat. coated*	110.00/	
Kraft Liners 42 lb.	100.00/	
Kraft Corr. .009	105.00/	
Binders Boards	110.00/116.00	

* Base Prices per 10 tons. Less than 10 tonbut over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds

	4 Ctns. per cwt.
100% Rag Ex. No. 1	$51.40/$53.90
100% Rag	44.55/ 46.15
75% Rag	33.90/ 35.40
50% Rag	28.10/ 29.55
25% Rag	24.85/ 26.80

Ledgers

	4 Ctns. per cwt.
100% Rag Ex. No. 1	$52.65/$54.55
100% Rag	45.65/ 46.40
75% Rag	35.15/ 36.10
50% Rag	29.40/ 30.05
25% Rag	26.15/ 26.80

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds

	4 Ctns. per cwt.
No. 1	$17.50/ —
No. 2	16.65/ 16.75
No. 4	15.60/ 15.95

Ledgers

	4 Ctns. per cwt.
No. 1	$18.80/ —
No. 2	18.05/ —

White Book

Conversion Coated	Case per cwt.
No. 1	$19.75/$20.90
No. 2	19.25/ 19.65
No. 3	17.75/ 18.90
Machine Coated	
No. 1	16.40/ 16.65
No. 2	14.90/ 15.15
Uncoated	
No. 1 Antique (Watermarked)	16.40/ 17.90
Offset	15.15/ 16.65
A Grade E. F.	15.40/ —
A Grade S. C.	15.90/ 16.15
B Grade E. F.	14.90/ 15.15
B Grade S. C.	15.40/ 15.65

Twines
All Prices Nominal, F.o.b. Mill

(Soft Fiber)		
Coarse Polished—India	.35½/	.36½
Fine Polished India	.41½/	.45
Unpolished—Paper Makers	.32¼/	.34¼
Tube Rope	.33¼/	.35½
Wrapping	.36 /	.38¼
Cotton	.58 /	.60
Polished Cotton	.55 /	—
(Hard Fiber)		
Mex. Sisal	.21 /	.27
(American Hemp)		
Polished Hemp	.45 /	.48
Unpolished	.35 /	.37½

WORLD WOOD PULP MARKETS

Third Quarter Contract Prices, Per Short Air-Dry Ton

	Delivered, with varying freight allowances		On dock Atlantic Ports Full freight allowance		
	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$65.00/ —	$65.00/ —			
Soda, Bleached	113.00/ —	113.00/ —		Competitive	
Sulphate, Bleached	118.00/126.00	126.50/ —	125.00/128.00		
Sulphate, Unbl'd North'n	— / —	82.50/105.00	94.00/ —	with	
Sulphate, Unbl'd South'n	80.00/ —				
Sulphite Bkhd. (S'ftw'd)	118.00/ —	118.00/ —	118.00/ —	Domestic	Competitive
Sulphite, Bkhd. (H'dw'd)	113.00/ —				
Sulphite, Unbleached	100.00/ —	100.00/ —	100.00/ —	Grades	
Sulphite, Unbl'd (Glassine)	105.00/ —	105.00/ —	104.00/105.00		

WASTE PAPER MARKET

Prices to Mills (Per Ton)

	Deld. Local Mills; F.o.b. Cars			F.o.b. Cars
	New York Sept. 2	Philadelphia Aug. 16	Boston Sept. 1	Chicago Sept. 1
No. 1 Mixed Paper	$7.00/ $8.00	$5.00/ $6.00	$5.00/ —	$8.00/ —
Boxboard Cuts	7.00/ 8.00	4.00/ 5.00	— / 5.00	11.00/ —
Mill Wrappers	11.00/ 12.00	7.00/ 9.00	— / 9.00	10.00/ —
No. 1 News	9.00/ 10.00	9.00/ 10.00	10.00/ 12.00	15.00/ —
Over-issue News	15.00/ 16.00	12.00/ 14.00	8.00/ 10.50	18.00/ —
Corrugated Containers	17.00/ 20.00	15.00/ 16.00	18.50/ 20.00	20.00/ —
New Corrugated Cuts	18.00/ 20.00	20.00/ 23.00	16.00/ —	23.00/ —
Double Kraft Ld. Corr. Cuts	30.00/ 32.00	30.00/ 35.00	25.00/ —	40.00/ —
Used Kraft Bags	25.00/ 30.00	18.00/ 22.00	25.00/ 30.00	20.00/ —
No. 1 Brown Kraft Paper	25.00/ 30.00	25.00/ 30.00	25.00/ —	20.00/ —
Super Resorted Br. Kraft	25.00/ 30.00	35.00/ —	40.00/ —	35.00/ —
New Br. Kraft Env. Cuts	65.00/ 70.00	60.00/ 65.00	60.00/ 65.00	55.00/ —
New Br. Kraft Cuts	40.00/ 45.00	55.00/ —	45.00/ —	50.00/ —
No. 1 Gdwd. Shvs.	15.00/ 20.00	15.00/ —	25.00/ —	25.00/ —
White Newsblanks	45.00/ 50.00	35.00/ —	— / 50.00	35.00/ —
No. 1 Flyleaf Shvs.	25.00/ 30.00	15.00/ 18.00	35.00/ 45.00	30.00/ —
No. 1 Soft Wht. Shvs.	65.00/ 70.00	60.00/ 65.00	70.00/ 80.00	55.00/ —
Super Soft Wht. Shvs.	80.00/ 85.00	65.00/ 70.00	80.00/ 90.00	60.00/ —
Hd. Wht. Shvs.	85.00/ 95.00	75.00/ 80.00	80.00/ 90.00	80.00/ —
Hd. Wht. Env. Cuts.	100.00/105.00	90.00/ 95.00	90.00/105.00	90.00/ —
New Manila Env. Cuts.	65.00/ 75.00	60.00/ —	60.00/ 70.00	55.00/ —
Col. Tab Cards	30.00/ 35.00	20.00/ 25.00	35.00/ —	35.00/ —
Manila Tab Cards	65.00/ 75.00	60.00/ 65.00	65.00/ 75.00	60.00/ —
No. 1 Mixed Ledger	30.00/ 35.00	25.00/ 30.00	37.50/ —	35.00/ —
White Ledger	45.00/ 55.00	35.00/ 45.00	45.00/ 50.00	45.00/ —
Mixed Books & Mags.	7.00/ 8.00	4.00/ 5.00	12.00/ —	7.00/ —
No. 1 Rep'd Hvy. Books & Mags.	20.00/ 25.00	8.00/ 10.00	22.00/ 23.00	20.00/ —

Rag Market

New Domestic Cotton Cuttings
(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.	
White Shirt	$10.00/	$10.50
Unbleached Muslin	10.00/	10.50
Light Silesias	7.00/	7.50
White Back Blue Overalls	6.25/	6.50
Blue Overalls	6.00/	6.25
Fancy Shirt	4.50/	5.00
Percales	5.50/	6.00
Light Prints	5.50/	6.00
No. 1 Washables	2.75/	3.00
Bleachable Khaki	5.00/	5.50
Unbleachable Khaki	4.50/	5.00
Cottonades	4.25/	4.75
Lt. Flannelettes	7.00/	7.50
Men's Corduroy	3.50/	4.00
Women's Corduroy	3.00/	3.50

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.	
No. 1 Whites, Repacked	$4.25/	$4.75
No. 1 Whites, Miscellaneous	3.50/	4.00
No. 2 Whites, Repacked	2.75/	3.00

No. 2 Whites, Miscellaneous	2.00/	2.25
Cotton Pants & Overalls	2.50/	2.75
Thirds and Blues, Repacked	2.00/	2.25
No. 1 Roofing Rags	1.25/	1.35
No. 2 Roofing Rags	1.00/	1.20
No. 3 Jute Bagging	**.95/**	**1.05**
No. 4 Brussels & hrd. Bck'd crpts.	**.90/**	**1.00**
Roofing Bagging	**.80/**	**.95**

New Foreign Cotton Cuttings

(Prices to Dealer, F.o.b. Dock, N. Y.)

	Per 100 lbs.
New Dark Cuttings	
New Mixed Cuttings	
Light Silesias	prices
Light Flannelettes	
New White Cuttings	are
New Unbleached Cuttings	
Fancy Shirt Cuttings	nominal
Light Prints	
Bleachable Khaki, No. 1	
Unbl. Khaki, No. 1	

Old Foreign Rags

(Prices to Dealer, F.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	prices
Extra Light Prints	
Old Light Prints	
Med. Light Prints	are
Dutch Blue Cottons	
Checks and Blues	
Linsey Garments	nominal
Dark Cottons, European	
Dark Cottons, Egyptian	
Old Shopperies	
New Shopperies	

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.	
Foreign Gunny, No. 1	**$7.50/**	**$8.00**
Domestic Gunny, No. 1	7.50/	8.00
Heavy Wool Tares	6.50/	7.00
No. 1 Scrap Bagging	**4.75/**	**5.00**
Foreign Manila Rope	**5.50/**	**5.75**
Domestic Manila Rope	**5.50/**	**5.75**
Jute Strings	**6.25/**	**6.50**
No. 1 Sisal Strings	5.00/	5.25
Mixed Strings	**1.15/**	**1.30**

PHILADELPHIA

Domestic Rags (new)

(F.o.b. Eastern Shipping Point)

	Per 100 lbs.	
White Shirt	$10.00/	$10.50
Fancy Shirts	4.50/	5.00
Light Silesias	6.50/	7.00
Unbleached Muslin	9.75/	10.25
Light Prints	5.25/	5.75
Washable No. 1	2.50/	3.00
Blue Overall	5.75/	6.25
Percales	5.50/	6.00
Unbleachable Khaki	4.50/	5.00
Bleachable Khaki	3.25/	3.75
Men's Corduroy	3.75/	4.25
Ladies' Corduroy	3.25/	3.75
Cottonades	4.00/	4.50

Domestic Rags (old)

(F.o.b. Eastern Shipping Point)

	Per 100 lbs.	
Mixed White	$3.00/	$3.50
Thirds and Blues Repacked	2.25/	2.50
Cotton Pants & Overalls	2.25/	2.50
No. 1 Roofing Stock	1.00/	1.20
No. 2 Roofing Stock	.90/	1.10
Roofing Bagging	.80/	1.00

Bagging

(F.o.b. Eastern Shipping Point)

	Per 100 lbs.	
Old Manila Rope	$5.00/	$5.25
Foreign Gunny No. 1	7.50/	8.00
Domestic Gunny No. 1	7.50/	8.00
Sisal Strings No. 1	3.00/	3.50
No. 1 Scrap	4.00/	5.00
No. 1 Jute Rope	5.50/	6.00

BOSTON

Bagging

(F.o.b. Boston)

	Per 100 lbs.	
Foreign Gunny	$6.50	/$7.00
Domestic Gunny	6.50	/ 7.00
Domestic No. 1 Old Rope	**6.00**	**/ 6.25**
Foreign No. 1 Old Rope	**6.50**	**/ —**
Mixed Strings	**1.35**	**/ —**
Transmission Rope—Domestic	**3.00**	**/ 3.50**
Jute Carpet Threads	—	/ 4.00
Bleachery Burlap	—	/ 9.00
Scrap Burlap—		
Foreign	5.75	/ 6.00
Domestic	5.75	/ 6.25
South America	6.00	/ 6.50
Austr. Wool Pouches	8.25	/ 8.75
New Zealand Wool Pouches	—	/ 6.00
New Burlap Cuttings	**7.50**	**/ 8.00**
Heavy Baling Bagging	**7.50**	**/ 8.00**
Paper Mill Bagging	—	/ 5.00

Domestic Rags (new)

(F.o.b. Boston)

	Per 100 lbs.	
New Light Prints	**5.75**	**/ 6.00**
Fancy Percales	6.25	/ 6.50
White No. 1 Shirt	10.00	/10.75
Light Flannelettes	—	**/ 7.00**
Canton Flannels, Bleached	—	**/ 9.00**
Underwear Cutters, Bleached	10.75	/11.25
Underwear Cutters, Unbleached	10.00	/10.25
Blue Overalls	6.00	/ 6.50
Soft Unbleached	9.75	/10.50
Blue Cheviots	6.00	/ 6.50
Fancy Shirt	4.00	/ 4.50
Washable	3.00	/ 3.25
Khaki Cuttings	5.00	/ 5.25
Men's Corduroy	4.50	/ 5.00
Khaki Canvas	—	/ 5.50
B. V. D. Cuttings	10.00	/10.25

Domestic Rags (old)

(F.o.b. Boston)

	Per 100 lbs.	
No. 1 Whites, Repacked	3.00	/ 3.50
No. 1 Whites, Miscellaneous	2.50	/ 3.00
Twos and Blues, Repacked	—	/ 2.00
Cotton Pants & Overalls	2.50	/ 2.75
No. 1 Roofing Stock	.95	/ 1.10
No. 2 Roofing Stock	.85	/ 1.00
Roofing Bagging	.75	/ .80

MATERIALS . . . . . .

Blanc Fixe

Prices firm. Demand moderate. Supply adequate. Currently quoted at $85.00 in bags, car lots, at works, 6 cents per pound, l.c.l., deld. By-product supply somewhat restricted. Quoted at $77.50 per ton, car lots, at works, 6 cents per pound, l.c.l., deld.

Bleaching Powder

Demand improved. Prices steady. Prices range from $4.25 to $4.75 per 100 pound drums, l.c.l., works.

Casein

Undertone of market weak as dull trading and heavy stocks face new season. U. S. production low. Current prices on processed acid precipitated grades 20 to 21 cents, premium grades 21½ to 22 cents; imported grades 17¾/18½ cents, f.o.b. shipping point, car lots.

Caustic Soda

Demand moderate. Stocks ample for prompt shipment. Prices firm. L.c.l. sales reported at competitive levels. Solid caustic is reported at $3.05 per cwt. flaked and ground is quoted at $3.45 per cwt., in 400 pound drums, $3.95 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.40 per cwt.; liquid 73 percent in tank cars at $2.50 per cwt., at works.

China Clay

Prices firm. Demand strong. Supply of domestic and imported ample. **Domestic filler quoted at $10 to $12.50 per ton, car lots, f.o.b. mines. Coating clay is $15 to $25. Imported clay quotation, short tons, $16 to $35, export warehouse.**

Chlorine

Demand strong. Supply condition slightly improved. Prices firm. Currently quoted at $2.40 per cwt. in single unit tank cars; at $2.70 to $3.90 per cwt. in multi-tank cars, f.o.b., works.

Rosin

Strengthening demand tightens supply and boosts prices. Inventory building due. Gum rosin in drums per 100 pounds net in car lots, f.o.b. Savannah, B, $5.75; G, H, I, K, $6.67; wood rosin, per 100 lbs., car lots f.o.b. Savannah; B, $4.25; FF, $5.50.

Rosin Size

Supply good. Demand steady. Seventy percent gum and pale wood grades, tank cars, $5.45 to $5.55 f.o.b. southern shipping point.

Salt Cake

Demand fair. Domestic quoted at $22.00/$24.00, f.o.b. shipping point, freight allowed to destination.

Soda Ash

Holiday slackening in demand. Supply easy. Prices firm. Current prices, car lots per 100 pounds; in bulk, $1.15; in paper bags, $1.40; and in barrels, $1.90.

Starch, Corn

Freight costs reflected in 3 cent price rises. Demand moderate. Supply ample. Pearl grade currently quoted at $4.85 per 100 pounds; powdered starch at $4.96 per 100 pounds; car lots, f.o.b. Chicago.

Starch, Potato

Supply tight. Strong paper demand. Market firm. Prices stronger. Idaho quantities limited to warehouse. High grade quoted at $7.00 cwt., l.c.l., ex N. Y. whse. Maine supply quoted $4.75/$4.88, f.o.b. Maine warehouse.

Sulphate of Alumina

Prices firm Supply good. Demand steady. The commercial grades are quoted from $1.50 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2.50 per 100 pounds in bags, car lots, at works.

TRENDS . . . . . .

(Continued from page 7)

tion cuts which occurred between June and August, in some cases were extended by one or two weeks beyond the usual two-weeks holiday, during which time shipments proceeded on a more or less normal scale. Consequently, increase of stocks had ceased for the time being.

Heavy Buying Firms Waste Paper

All principal markets report heavy buying of all grades, including *mixed*, and price rises of $3.00 to $5.00 are reported, with tightening supply condition. Some indication of the trend should clear now that the August 31st deadline on freight rates is passed, since part of the heavy buyirg was anxiety to cover for the immediate future and avoid paying additional 4 percent freight costs which became effective September 1.

Production Indexes

Ratio of production of unbleached kraft paper to potential mill capacity for that product was 76.0 percent for the week ended August 27, compared with 74.9 percent for the preceding week, and with 97.9 for the corresponding week of last year.

Comparative ratios of U.S. paper and paperboard production to mill capacity, as reported by AP&PA, are:

	Aug. 27 1949	Aug. 20 1949	Aug. 28 1948	Aug. 30 1947	Aug. 31 1946
Paper	93.2	‡89.9	95.2	104.1	105.6
Paperboard	86.0	87.0	93.0	99.0	100.0

‡ Revised.

Paperboard Production (Tons)

	Aug. 27 1949	Aug. 20 1949	Aug. 28 1948
Production	184,605	188,028	183,835
New Orders	173,980	186,039	166,039
Unfilled Orders	294,327	310,125	344,469

Percent of Activity, Current, 86%; Year, 79%.

General Business Indexes

Index of general business activity for the week ended August 27 declined to 142.7 from 143.2 in the preceding week, compared with 149.3 in the corresponding week of 1948. Index of paperboard production fell to 179.2 from 185.1 in the preceding week, compared with 175.0 in the corresponding week of 1948.

Building

- **FOR THE PAPER INDUSTRY**

We design, build, and equip paper and pulp mills ... steam generating plants ... and facilities for eliminating stream pollution.

Under one contract and one responsibility, we deliver jobs complete, ready for operation.

We also furnish engineering reports and surveys. Current cost data available at all offices.

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FINANCIAL RECORD

	Per Share Earnings: Calendar Year 1948	Per Share Earnings: 12 Mo. to Approx. 6/30/49	Indic. Annual Divid. Rate	Sept. 6 Approx. Market Price
PREFERRED STOCKS				
Armstrong Cork Co. $3.75 Cum.	$46.33*	$38.47*	$3.75	$99
Armstrong Cork Co. $4.00 Cum. Conv.	46.33*	38.47*	4.00	109⅛
Celotex Corp. 5% Cum.	26.42c	$15.31i	1.00	16⅝
Champion Paper & Fibre $4.50 Cum.	99.97f	19.91r	4.50	96¾
Container Corp. of Amer. 4% Cum.	105.41	99.87	4.00	100½
Crown Zellerbach $4.20 Cum.	61.84i	61.00p	4.20	100¾
Crown Zellerbach $4.00 Cum. Conv. 2nd	58.59i	57.90p*	4.00	93½
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	10.10	10.04	2.50	50⅜
Flintkote Co. $4 Cum.	83.25	66.07	4.00	102½
Robert Gair Co., Inc. 6% Cum.	17.08	13.73	1.20	16⅞
International Paper Co. $4 Cum.	263.00	254.71	4.00	101⅞
Johns-Manville $3.50 Cum.	209.89	212.03	3.50	109⅝
Kimberly Clark Corp. 4½% Cum.	80.74	74.36	4.50	102⅞
Kimberly Clark Corp. 4% Cum. Conv. 2nd	41.59*	44.25*	4.00	100⅝
MacAndrews & Forbes 6% Cum.	62.23	58.66	6.00	135
Mead Corp. 4¼% Cum.	73.46	68.78k	4.25	92
Mead Corp. 4% Cum. Conv. 2nd	29.91*	24.30k*	2.00	32½
Paraffine Cos. Inc. 4% Cum. Conv.	156.11	136.31	4.00	103
Rayonier Inc. $2 Cum.	16.43	13.99	2.00	31⅜
St. Regis Paper Co. 4.40% 1st A	79.90	51.11	4.40	81½
Scott Paper Co. $3.40 Cum.	59.06	55.14	3.40	96½
U. S. Gypsum Co. 7% Cum.	314.45	296.82	7.00	184¾
United Wallpaper Inc. 4% Cum. Conv.	(d)0.79	15.44a	2.00	24⅜
West Virginia Pulp & Paper 4½% Cum.	79.45c	69.93p	4.50	107¼
COMMON STOCKS				
APW Products Co.	$0.73	(d)$0.56	(m)	2⅞
American Writing Paper Corp.	(d)0.15	(d)0.16	$0.25	5⅛
Armstrong Cork Co.	7.54	6.13	3.00	47⅜
Celotex Corp.	7.21c	4.06i	1.00	15⅛
Certain-Teed Prods. Corp.	4.02	3.21	1.00	12
Champion Paper & Fibre	8.70f	1.70r	2.00	23⅞
Congoleum Nairn Co.	5.78	4.92	2.25	26¾
Container Corp. of America	10.12	9.52	4.50	35
Crown Zellerbach	6.70e	6.68p	2.00	26⅝
Dixie Cup Co.	6.70	6.63	1.00	28½
Eastern Corp.	4.76	1.27	(h)	8⅝
Flintkote Co.	5.86	4.40	2.50	25⅞
Robert Gair Co., Inc.	2.67	2.10	0.70	5⅞
Great Northern Paper Co.	4.63	5.82	2.80	39⅛
International Paper Co.	16.73	16.19	5.00	53½
Johns-Manville Corp.	5.22	5.27	2.00	39⅞
Kimberly Clark Corp.	5.02	4.55	1.65	22
MacAndrews & Forbes Co.	3.68	3.56	2.50	33¼
Marathon Corp.	4.11c	3.42	1.40	20½
Mead Corp.	6.36	5.84k	1.00	12¼
National Container Corp.	2.28	1.38	0.40	6⅛
Paraffine Cos. Inc.	2.45	2.14	1.20	18⅝
Rayonier, Inc.	9.09	7.55	2.00	24⅛
Ruberoid Co.	11.80	9.48	3.25	50
St. Regis Paper Co.	2.71	1.64	0.60	6⅝
Scott Paper Co.	4.15	5.02	2.50	60¼
Sutherland Paper Co.	6.02	4.92	2.50	33½
Union Bag & Paper Corp.	9.17	6.50	3.00	24⅛
United Board & Carton	2.04b	(d)0.35i	(e)	5⅝
U. S. Gypsum Co.	15.04	14.18	6.00	95⅞
United Wallpaper	(d)0.10	0.42a	(n)	3⅝
West Virginia Pulp & Paper	11.33c	9.70p	4.00	40⅝

(a) 12 months to approximately 3/31/49
(b) Year ended 11/23/48
(c) Year ended 10/31/48
(d) Deficit
(e) Omitted dividend 2/4/49
(f) 11 months to 3/31/49
(g) 12 months to approximately 1/31/49
(h) Directors took no action on 8/2/49 dividend—last payment 5/2/49
(i) 12 months to approximately 4/30/49
(j) 8 months to 12/31/48
(k) 12 months to approximately 6/12/49
(m) Directors took no action on July, 1949, dividend—last payment 1/10/49
(n) Last payment 25c, 9/16/47
n.a. Not available
(p) 12 months to approximately 7/31/49
(r) 3 months to 6/30/49

(*) Earnings per combined preferred shares.

Dividends Declared

Howard Smith Paper Mills, Ltd., has declared a dividend of 50 cents per share on its common stock and 50 cents on its preferred stock, both payble October 31 to holders of record September 30.

Mersey Paper Co., Ltd., has declared a dividend of 50 cents per share on its common stock, payable October 1 to holders of record September 10.

Nekoosa-Edwards Paper Co. has declared a quarterly dividend of 25 cents per share payable September 30 to holders of record September 16.

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MEAD
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A reproduction of this incident from the fabulous life of Paul Bunyan—the forty-sixth of a series—will be sent on request. It will contain no advertising.

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G-E single-motor drives for lineshaft-driven paper machines keep any pre-set speed with pin-point accuracy—provide simple, flexible operation over a wide speed range—help maintain uniform weight and quality of the sheet!

It's no trick at all—with General Electric single-motor drives—to control machine speeds with high accuracy. Thanks to a unique partnership of tachometer generator, electronic amplifier, and amplidyne exciter, pre-set motor speeds are closely held—no matter how the load fluctuates.

To bring out the best in your lineshaft-driven machines—

—You get stable, "hunt-free" performance over the entire speed range.

—Pre-adjustment of rate of acceleration frees operator for other duties.

—You can readily adapt this flexible drive to suit machine conditions, with motor connected to the line shaft directly by belts or chains, or through speed reducers.

—Installation is simple, maintenance costs low, service continuity high.

—Easy installation adjustment permits close tuning of the drive to any combination of inertia and friction loads.

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G-E single-motor drives designed to give added efficiency to your line-shaft-driven machines are described in a new bulletin, GEA-5288. A copy is yours for the asking. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

THE SPEED YOU SET

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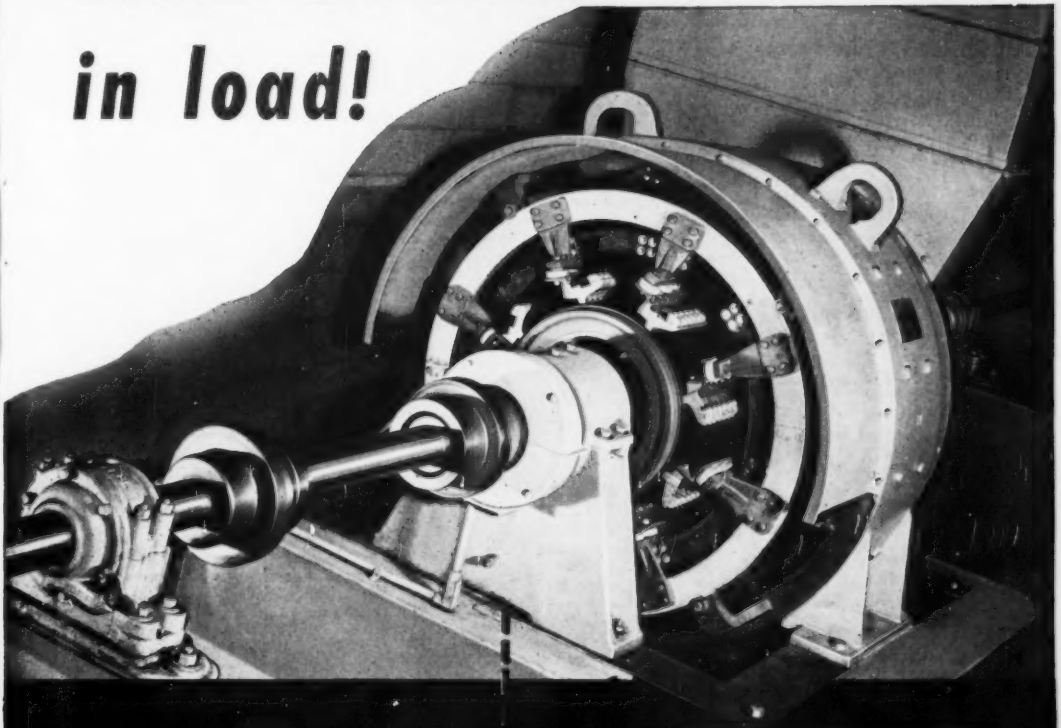

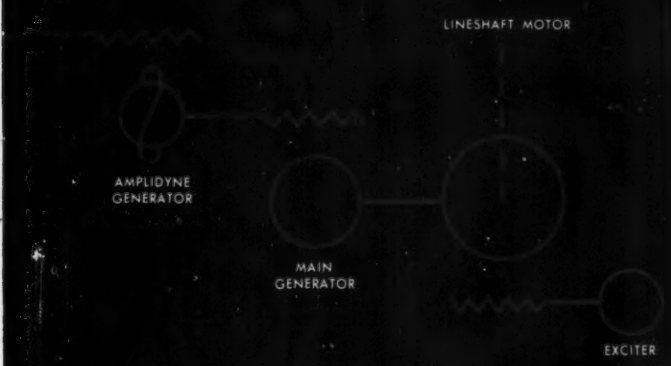

Easy to operate—one dial does it!

To control the speed of the drive, the operator merely turns an indicating dial to the speed setting desired. A pilot motor then turns the master control rheostat to the corresponding position. Rate of acceleration—controlled automatically by the pilot motor—can be adjusted over a wide range. If the drive is stopped and then re-started, it will automatically accelerate up to the speed pre-set on the operator's dial, with no re-setting needed.

GENERAL ELECTRIC

Eddy Paper Corp. has declared a dividend of $3 a share on common stock on September 15, bringing declarations this year to $5. In 1948 disbursements were $12.

Union Bag & Paper Corp. has declared a regular quarterly dividend of 50 cents per share on its capital stock, payable September 16, to holders of record September 9.

Eastern States-St. Regis Swap

PHILADELPHIA—A formal offer has been made by Eastern States Corp., to holders of its $7 and $6 cumulative preferred stocks to exchange them for common shares of the St. Regis Paper Co., owned by Eastern States Corp.

The offer was made as of August 30 and terminates at the close of business on September 30, unless extended.

Eastern States owns one million common shares of St. Regis Paper, and offers 860,000 of these shares in exchange for its own preferred stock on the following basis:

For each share of Series A $7 dividend cumulative preferred, nine shares of St. Regis common and $4.79 in cash. For each share of Series B $6 cumulative preferred, 8⅓ shares of St. Regis common and $4.43 in cash.

$5,000,000 Debenture Issue

WASHINGTON — The Federal Power Commission has authorized the Holyoke Water Power Co., of Holyoke, Mass., to issue $5,000,000 in three percent debentures, proceeds of which will be used to finance construction of the company's new power station to be built on the Connecticut River at Holyoke, and for other corporate purposes. The company said in its application that it had executed purchase contracts for the debentures with the Aetna Life Insurance Co. for $3,000,000; Connecticut General Life Insurance Co., $1,250,000; and Connecticut Mutual Life Insurance Co., $750,000. The debentures are to be dated August 1, 1949, and will mature September 1, 1979.

FOREIGN

Cauvery Mills and Forest Inds., Ltd.

CALCUTTA—India's production of paper is not sufficient to cope with her home requirements. After touching the peak level of 103,783 tons in 1944 production has recorded a gradual decline, *Indian Pulp & Paper* reports. "Although some signs of improvement are visible there remains a wide gap between production and consumption. It is, therefore, the chief task of the industry today to narrow this gap and make India not merely a self-sufficient but an exporting country in the field of paper. This objective can be achieved by expanding the existing units and installing new ones."

"In this background we welcome the endeavours of the promoters of Messrs. Cauvery Paper Mills and Forest Industries, Ltd., who are setting up a paper mill and other allied industries in the province of Coorg in the Indian Union. The factory is going to be located very near the sources of supply of raw materials. The Government of Coorg have granted several privileges to the company, including the lease of bamboos and grass at a concessional rate. Several overseas experts, including A. G. Stewart, we learn, have expressed satisfaction at the prospects of the company."

Australia

Acting Commonwealth Statistician S. R. Carver has released figures relating to the Australian paper industry for the three months to September 30, 1948. These reveal that imports of pulp, paper and stationery totalled a value of £23,383,000, the main imports coming from—the United Kingdom (£8,088,000), Canada (£4,027,000), Sweden (£3,768,000) and the United States (£3,027,000).

Details of imports are as follow (with figures for the previous similar period in parentheses): Printing paper £1,097,000 (£1,966,000); wrapping paper £646,000 (£422,000); writing and typing paper £550,000 (£388,000); other paper £380,000 (£430,000); pulp £973,000 (£653,000); millboard and other boards £329,000 (£342,000); and stationery, etc. £1,288,000 (£1,359,000).

* * *

Victoria Government Statistician O. Gawler reports that during the six months ended December 31., 1948, imports of pulp and paper into that State were: Pulp, £703,799; printing papers, £695,713; writing and typewriting papers, £299,898; wrapping papers, £387,699; other papers, £444,275; and millboards and other boards, £142,770.

Victoria's imports of paper from the United States over the five years from 1942 to 1946 were as follow: 1942—£65,525; 1943—£89,719; 1944—£641,107; 1945—£498,661; and 1946—£400,087. Imports of stationery from the United States during those years was: 1942—£24,168; 1943—£29,011; 1944—£90,726; 1945—£104,511; and 1946—£146,668.

* * *

South Australian Government Statistician A. W. Bowden reports that during May the value of imports of paper and pulp was £40,920. Imports for the 11 months to May 31, totalled £711,185 compared with the £884,166 of the 11 months ended May 31, 1948.

* * *

The coal strike is at present hitting the Australian paper industry rather severely, but there is now every sign of its early settlement. Heavy cuts in electric light and power (with total cuts in Western Australia) slowed down production badly.

Another item of concern to the local paper making industry is the recent increase in all interstate shipping rates —all cargoes now being upped by 15s. per ton.

The Prime Minister (Mr. Chifley) states that later in the year the Federal Government may have to order even more drastic cuts in dollar expenditure than those planned for the July-September quarter. Australia's dollar trade deficit for the year ended June 30 was £12,519,000 (about $40,000,000)—(Last year the unfavorable balance was £42,084,000—about £134,500,000).

* * *

Among recent applications for Australian patents was one (No.132,339) lodged by Australian Paper Mfr's Ltd., New South Wales, for a process of bitumen and fiber recovery, details being: 'A process for the separate recovery of bitumen and fibers from bituminized paper, board and other such products, comprises treating a disintegrated stock of the bituminized product with a bitumen solvent in the form of an emulsion under controlled conditions of temperature. The bitumen-solvent particles having a density less than that of water rise to the surface for ready removal, leaving the bitumen-free fibers in the vessel for separate recovery. In the initial treatment the bituminized paper may be treated at a temperature sufficient to render the bitumen plastic, and screened to remove some of the bitumen, the remainder of which is subsequently freed by treatment with the emulsified bitumen solvent."

* * *

S. R. Cooper, Adelaide manager of Alex Cowan & Sons, Ltd., recently gave a most interesting address on Ancient Papermaking to members of the printing and allied industries. In concluding, he stressed the fact that during the past year formulae had been produced for the manufacture of papers suitable for such diversified mamaterials as fuel briquettes, ammonium nitrate, cooked and frozen foods, toasted wheatgerms and barbecued sausages in sauce. 'Every change, every growth, every expansion in industry, he said, "must increase the demand for papers."

* * *

A very high-grade white clay suitable for paper making is now being found in South Australia, and tests are being made to discover just how good this really is. Large quantities have previously been obtained from the Ballarat area (Victoria), but in general this deposit is not as good as the material secured from overseas.

* * *

Registered recently: C. and E. L. Dyson, manufacturers of paper bags; factory, Newcastle Street, Perth.

* * *

Western Australian Government Statistician R. J. Little reveals that there are now 120 factories in that State engaged in the paper, stationery, printing and allied industries, employing 1,917 workers. Money invested in land and buildings totals £537,632, and in plant and machinery £255,150. Salaries and wages for the last financial year amounted to £562,582, and the total value of output was £1,800,628.

control
microorganism
damage

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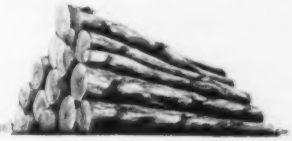

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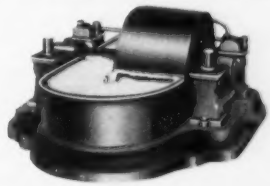

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SANTOBRITE

(Monsanto's Sodium Pentachlorophenate, Technical)

Santobrite provides profit-saving protection from losses caused by microbiological activity at many points in paper manufacture.

Low in initial cost, Santobrite requires no special equipment — can be easily and economically applied. It is chemically stable, non-corrosive to metals, non-volatile and comparatively odorless. Furthermore, it is harmless to your employes when properly handled.

For full information on how Santobrite can be used to advantage in your mill, send for a copy of Monsanto Technical Bulletin O-5, "Santobrite for Microorganism Control in the Pulp and Paper Industry." Ask any District Sales Office, or write MONSANTO CHEMICAL COMPANY, Desk B, Organic Chemicals Division, 1764 South Second Street, St. Louis 4, Missouri.

DISTRICT SALES OFFICES: New York, Chicago, Philadelphia, Boston, Cleveland, Detroit, Charlotte, Birmingham, Houston, Los Angeles, San Francisco, Seattle, Portland. In Canada: Monsanto (Canada) Limited, Montreal. *Santobrite: Reg. U. S. Pat. Off.*

PROTECTIVE APPLICATIONS

1. **Log Storage — prevents stains caused by rot, fungi**
2. **Slime in Mill System — combats bothersome and damaging microbiological activity**
3. **Stored Pulp Lap — prevents rotting, staining, specking, sliming**
4. **Felts — toxic to microorganisms responsible for rotted machine felts**
5. **Board Stocks — helps prevent spoilage caused by microbiological decomposition**
6. **Size — prevents attacks by molds and bacteria in sizing and coating materials**
7. **Insect Damage — will protect cellulosic materials against termite and other insect attack**
8. **Finished Products — protects boxboard and board against mildewing**

MONSANTO
CHEMICALS — PLASTICS

MONSANTO CHEMICAL COMPANY
Desk B, Organic Chemicals Division
1764 South Second Street, St. Louis 4, Missouri

Please send me a copy of Technical Bulletin O-5 on Santobrite.

Name_____ Title_____

Company_____

Address_____

City_____ State_____

SERVING INDUSTRY . . . WHICH SERVES MANKIND

Ireland

DUBLIN — In the first six months of 1949, the Republic of Ireland imported 3,656 tons of papermaking materials, valued at £110,663, against 3,475 tons, valued at £84,477 in the first half of 1948.

Imports of coated printing paper during the 1949 period amounted to 7,010 cwts., valued at £35,655 the figures for the 1948 period being 6,588 cwts., valued at £40,749.

Newsprint imports during the first half of 1949 were 168,747 cwts., valued at £340,209 as against 124,163 cwts., valued at £228,491 in the corresponding period of 1948; and of other uncoated printing paper, 24,011 cwts., valued at £81,034, as against 35,713 cwts., valued at £165,622 in the 1948 period.

Imports of writing paper in large sheets were 7,569 cwts., valued at £29,793 in the first six months of 1949, and 9,340 cwts., valued at £44,298 in the corresponding period of 1948.

The total value of imports of paper, cardboard, etc., during the 1949 half year was £1,590,444 against £1,665,336 in the 1948 period.

In the first six months of 1949, £145,213 worth of paper, cardboard, etc., was exported from the Republic of Ireland, the value for the 1948 period being £65,870.

Re-exports of these commodities during the half year under review were valued at £1,913 compared with £4,10[illegible] in the corresponding period of 1948.

Finland Aiding India

WASHINGTON — Finland will send India technical aid to build up Indian industries in pulp and paper making, woodwork and wood distillation, under a new joint agreement, it is reported in this capital.

PRODUCT DEVELOPMENT

Full-Color Transparent Acetate Sign

NEW YORK—Production of advertising displays printed in natural colors on transparent acetate through a patented Swiss process is now being made available in this country through the Mercury Paper Co., Inc., 1186 Broadway.

Harry J. Kennedy, vice-president, said that the process is a closely-guarded secret of the Linhare & Rittel Co., printing house of Basel, Switzerland. Arrangements for making the products available here in the form of finished displays were completed by Mr. Kennedy during a recent European trip.

The transparencies, bearing the trade name Trans-Look in this country, are known as "Fantasia" in Europe, Mr. Kennedy said. The process, originated before the war and considerably improved in the last three years, is a form of lithography and employs Swiss-made inks, he added. American inks have been tested but were found unsuitable.

The colors are reproduced in a natural soft finish, and are skillfully shaded and blended.

Mr. Kennedy said that delivery of the finished display work can be made in this country from two to four weeks after an order is placed. Air freight will be used in most cases.

For an order of 50,000 finished sheets, the price can be brought down to 13 to 15 cents each, including shipping and import duty. Duty on work of five colors or less is 15 percent, and on work over five colors it is 20 percent, Mr. Kennedy said.

Any size can be printed up to approximately two-by-three feet. Plates may be made here and shipped by air. A minimum of two colors is required.

In Europe, Mr. Kennedy observed, the displays are used on passenger airplanes and railroad car windows. They have also been adopted for use on car windows of the Paris subway. Such displays, he said, are printed in lighter colors, so that passengers may see names of stations, etc. Many of these transparencies have lasted as long as a year after being put up.

Fuel Logs from Waste Paper

NEW YORK — The Williams-Bauer Corp., 154 Nassau street, has been assigned patent rights by the U. S. Bureau of Patents, on a fuel log made from waste paper, Ralph O. Williams, head of the firm, disclosed on August 10. Manufacture of logs from waste paper will begin soon, Mr. Williams said.

Leedpak Salt & Pepper Shakers

NEW YORK — The Leed Sales Co., specialty package division is marketing miniature shakers one inch high and filled with either three grams of salt or one-half gram of pepper. They are made of white sanitary food board imprinted with a standard stock design or can be ordered in any color, or combination of colors, with any desired advertising copy, emblem, design or motto. Patents are pending.

MEETINGS

ASSOCIATION EXECUTIVES: Please send us your meeting dates and locations for this column as far in advance as possible. No charge for publication.

SEPTEMBER 8-10: American Pulp & Paper Mill Superintendents Ass'n., Inc., New York-Canadian Division, Champlain Hotel, Bluff Point, Plattsburgh, N. Y.

SEPTEMBER 9-12: National Ass'n. of Waste Material Dealers, Inc., 1949 Fall Meeting, The Sagamore, Lake George, New York.

SEPTEMBER 12-15: West Coast TAPPI Meeting. Multnomah Hotel, Portland, Oregon. For further details, write to V. A. Wise, Griffith Rubber Mills, 2439 N.W., 22nd Ave., Portland, Ore.

SEPTEMBER 12-16: Fourth National Instrument Conference & Exhibit, Municipal Auditorium, St. Louis, Mo. For details, write to Foxboro Co., St. Louis, Mo.

SEPTEMBER 16: Wallboard Conference, Northeastern Wood Utilization Council, Cambridge, Mass.

SEPTEMBER 18-23: American Chemical Society, Div. of Cellulose Chemistry, Atlantic City, N. J.

SEPTEMBER 21-23: Direct Mail Advertising Association, Inc., Annual Conference, Congress Hotel, Chicago. For details, write to Frank Frazier, Direct Mail Advertising Ass'n., Inc., 17 East 42nd Street, New York 17.

SEPTEMBER 22-24: American Pulp & Paper Mill Superintendents Ass'n., Fall Meeting, Poland Spring, Maine.

SEPTEMBER 23: American Ass'n. of Textile Chemists and Colorists, New York Section, Kohler's Swiss Chalet, Rochelle Park, N. J.

SEPTEMBER 26-28: American Management Association, Personnel Division, Waldorf-Astoria, New York, N. Y.

PAPER-PULP-FIBERBOARD

Research Facilities

Our modern, well equipped laboratories are staffed by expert wood chemists and wood technologists.

Research fields in which we specialize include:

Pulping New Species
Water Purification
Paper Coatings
Stream Pollution Abatement
Waste Liquor Utilization
Paper Products

Write us for appointment at your office or ours. PTJ

TIMBER ENGINEERING COMPANY • WASHINGTON 6, D.C.

SEPTEMBER 26-29: National Paper Trade Ass'n., Fall Meeting, Stevens Hotel, Chicago, Ill. For further details, write to A. W. Chamberlain, Exec-Secy., National Paper Trade Ass'n., 220 East 42nd St., New York, N. Y.

OCTOBER 3-7: Second Wayne University Packaging & Materials Handling Institute, The Horace H. Rackham Educational Memorial Main Auditorium, 80 Farnsworth Ave., Detroit, Michigan.

OCTOBER 4-5: American Pulp & Paper Mill Superintendents Ass'n., Inc., Northwestern Div., 1949 Fall Meeting, Hotel Duluth, Minn.

OCTOBER 4-7: Fourth Annual Industrial Packaging & Materials Handling Exposition, Convention Hall, Detroit, Michigan. For further details, write to C. J. Carney, Jr., Managing Director, Soc. of Industrial Packaging & Materials Handling Engrs., 20 W. Jackson Blvd., Chicago 4, Ill.

OCTOBER 10-14: West Coast Meeting, American Society for Testing Materials. (First national meeting of ASTM on West Coast.) Fairmont Hotel, San Francisco, California.

OCTOBER 11-13: Society of American Foresters, National Meeting, Olympic Hotel, Seattle, Washington.

OCTOBER 14-15: South Eastern Division Superintendents Ass'n., Hotel Roanoke, Roanoke, Va.

OCTOBER 20-21: American Management Association, Office Management Division, Hotel Statler, New York, N. Y.

OCTOBER 24-26: Southern Division Superintendents Ass'n., Frances Hotel, Monroe, La.

OCTOBER 24-28: National Safety Council, 1949 National Safety Congress, Chicago. For details, write to Harley B. Goodrich, National Safety Council, 20 North Wacker Drive, Chicago 6, Ill.

OCTOBER 31-NOVEMBER 1: Forest Products Research Society, Statler Hotel, New York City.

OCTOBER 31- NOVEMBER 2: Packaging Machinery Manufacturers Institute, 17th Annual Meeting, Edgewater Beach Hotel, Chicago, Illinois. For details, write to Package Machinery Manufacturers Institute, 342 Madison Ave., New York 17, N. Y.

OCTOBER 31-NOVEMBER 3: TAPPI Engineering Conference, Statler Hotel, Boston, Mass.

NOVEMBER 1-5: Pacific Chemical Exposition, California Section, American Chemical Society, San Francisco Civic Auditorium, San Francisco, Calif. For details, write to Marcus W. Hinson, exposition manager.

NOVEMBER 10-11: American Management Association, Production Management, Palmer House, Chicago, Illinois.

NOVEMBER 28-DECEMBER 3: 22nd Exposition of Chemical Industries, Grand Central Palace, New York, N. Y. For details, write to Charles F. Roth, Mgr., International Exposition Co., Grand Central Palace, N. Y. 17, N. Y.

DECEMBER 1-2: American Management Association, Finance Division, Waldorf-Astoria, New York, N. Y.

DECEMBER 4-7: American Institute of Chemical Engineers, Annual Meeting, Pittsburgh, Pa.

DECEMBER 15-16: American Management Division, Insurance Division, The Drake, Chicago.

AWARDS

Navy Awards Made

N. Y. Navy Purchasing Office

Inv. No. 5306—covering Paper, Mimeograph, White, Chemical Wood—801,500 reams to: Walker-Goulard-Plehn Co., Inc., New York, N. Y. —746,650 reams @ $.426-$.574, 1% 10 days.

Inv. No. 5298—covering Wadding, Creped Cellulose, Water-Resistant—13,000 rolls, to: Kimberly-Clark Corp., Neenah, Wis.—13,000 rolls @ $5.25 per roll.

Inv. No. 5258—Folders, file, pressboard, to Advance Salesbook Co., New York, N. Y.—157,500 sets @ $.4328 to $.506.

Inv. No. 5366—Paper, Duplicator, copy, liquid process—62,000 reams, to: Lincoln Paper Co., Chicago, Ill. @ $.4656, $.5765 and $.6595. Contr. N140s-155s-13334B.

IMPORTS

IMPORTS AT NEW YORK

Week Ending September 3

Newsprint

N. Y. Journal American, Markland, Liverpool, N.S., 362 rolls.

N. Y. Herald Tribune, Markland, Liverpool, N.S., 1772 rolls.

Brooklyn Eagle, Markland, Liverpool, N.S., 707 rolls.

Brooklyn Eagle Press, Markland, Liverpool, N.S., 57 rolls.

Richmond Newspapers, Markland, Liverpool, N.S., 1577 rolls.

News Syndicate Co., Anatina, Dalhousie, 8952 rolls.

H. C. Craig Co., Kermic, Donnocona, 347 rolls.

News Syndicate Co., Mimi, Thorola, 1816 rolls.

H. C. Craig Co., Newscarrier, Donnacona, 346 rolls.

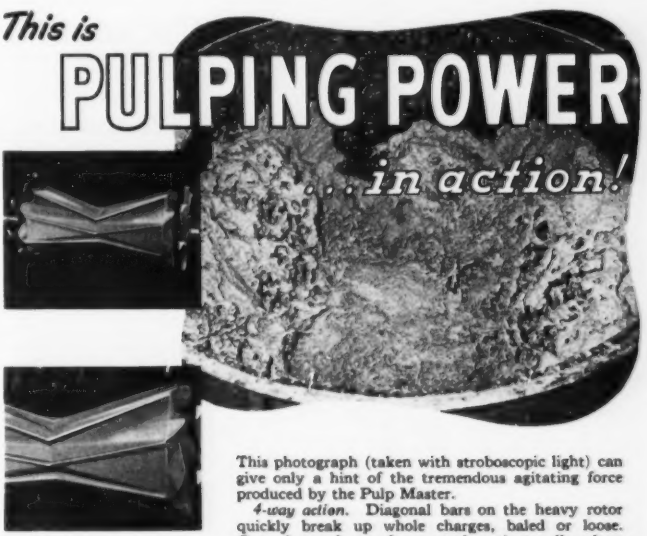
R. A. Olsen, G.D.D., Donnacona, 358 rolls.

News Syndicate Co., Ted, Thorola, 1871 rolls.

(———), Donpaco, Donnacona, 346 rolls.

News Syndicate Co., Ethel Tombs, 3 Rivers, 506 rolls.

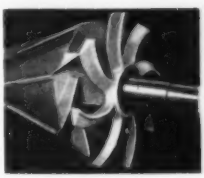
Gilman Paper Co., Fort Avalon, Cornerbrook, 71 rolls.

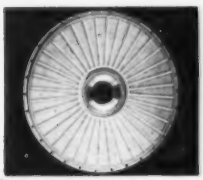


This photograph (taken with stroboscopic light) can give only a hint of the tremendous agitating force produced by the Pulp Master.

4-way action. Diagonal bars on the heavy rotor quickly break up whole charges, baled or loose. Cone shape of rotor forces stock against walls, where specially shaped impeller blades whirl and recirculate it. When pieces are sufficiently reduced they are rubbed between impellers and radial barred refining discs for thorough defiberization.

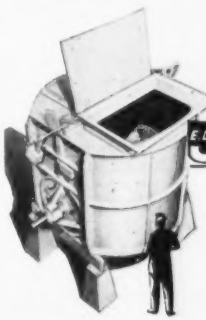
Complete disintegration of baled pulp, waste-paper, machine broke in 10 to 40 minutes. Efficient use of power and low maintenance cost make it extremely economical, too.





SEE IT IN ACTION

Four sizes, from 500 to 4,000 lbs. at 6½% density. Available for batch or continuous operation. Write for Bulletin EDJ-1019-A — or arrange to see the Pulp Master in action on your own stock.



E.D. Jones

PULP-MASTER

E. D. JONES & SONS COMPANY • PITTSFIELD, MASS.
BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

Wall Street Journal, Fort Avalon, Cornerbrook, 85 rolls.
N. Y. World Telegram, Fort Avalon, Cornerbrook, 415 rolls.
N. Y. Sun, Fort Avalon, Cornerbrook, 196 rolls.
Hearst Enterprises Inc., Fort Avalon, Cornerbrook, 868 rolls.
N. Y. Times Co., Fort Avalon, Cornerbrook, 769 rolls
Madden Reeve Angel & Co., Inc., Sparreholm, Helsingfors, 138 rolls.
Madden Reeve Angel & Co., Inc., Sparreholm, Kotka, 138 rolls.

Surface Coated Paper

Gevaert Co. of America, American Counselor, Antwerp, 21 cs.

Drawing Paper

H. Reeve Angel & Co., Inc., American Shipper, London, 4 cs.

Filter Paper

H. Reeve Angel & Co., Inc., American Shipper, London, 13 cs.
H. Reeve Angel & Co., Inc., American Shipper, London, 14 cs.

Paper & Envelopes

H. W. Robinson Co., American Shipper, London, 2 cs.

Paper Napkins

H. W. Robinson Co., American Shipper, London, 18 cs.
H. W. Robinson Co., Colombia, Copenhagen, 41 cs.

Paperhangings

C. A. Haynes & Co., American Ranger, London, 19 cs.

Wallpaper

(———), Ile de France, Havre, 13 cs.
Meadows Wye & Co., American Ranger, London, 1 cs.

Photo Paper

Lep Transport Inc., Queen Mary, Southampton, 2 cs. (base paper).

Fibre Boards

Oliver Fibre Co., Sparreholm, Gothenburg, 112 bls.

Uncoated Paper

F. C. Strype, Arkeldyk, Rotterdam, 13 cs.

Wallboard

Elof Hansson Inc., Stockholm, Gothenburg, 2 cs.

Serviettes

(———), Parthia, Liverpool, 10 crates

Tracing Cloth

E. Dietzgen & Co., Parthia, Liverpool, 13 cs. (bleached cotton).

Boxboard

Jay Madden Corp., Sparreholm, Rauma, 19 rolls.

Tissue Paper

B. F. Drakenfeld & Co., Parthia, Liverpool, 27 cs.

Baryta Coated Paper

W. Reimerdes, American Ranger, Bremen, 5 cs.
W. C. Sullivan, American Ranger, Bremen, 18 cs.

Paper Caps

Roberts Cushman, Saturnia, Genoa, 2 cs.

Miscellaneous Paper

D. H. Burdett, Stockholm, Gothenburg, 5 cs. (Xmas star).
B. M. Heede, Stavangerfjord, Oslo, 17 bls.
Johnson & Ryerson, Stavangerfjord, Stavanger, 5 cs.
O. H. Christopher, Stavangerfjord, Stavanger, 4 cs.
O. O. Stone, Stavangerfjord, Stavanger, 1 cs.

Rags, Baggings, etc.

E. J. Keller Co. Inc., Knut Bakke, Antwerp, 53 bls. old bagging.
S. H. Wahlerstein Co. Inc., Mount Davis, Bombay, 318 bls. cotton waste.
New England Waste Co., Mount Davis, Bombay, 100 bls. old hessian rags, 100 bls. cotton waste.
Brandweir Mazur Co., Mount Davis, Bombay, 196 bls. cotton waste.
W. J. Green Co., Mount Davis, Genoa, 90 bls. hessian rags.
Chase National Bank, American Judge, Antwerp, 7 bls. hosiery clips.
A. de Vries Trading Corp., Pres. Polk, Genoa, 97 bls. scrap bagging.
(———), Parthia, Liverpool, 95 bls. woolen rags, 3 bls. threadwaste.
National City Bank, Hoegh Silverstream, Bombay, 100 bls. old jute rags.
C. Comiter, Hoegh Silverstream, Bombay, 200 bls. cotton waste.
New England Waste Co., Hoegh Silverstream, Bombay, 1,206 bls. cotton waste.
(———), Hoegh Silverstream, Bombay, 100 bls. old hessian rags.
Royal Manufacturing Co., Hoegh Silverstream, 100 bls. cotton waste.
Castle & Overton, Inc., Hoegh Silverstream, Cochin, 150 bls. old jute rags.
National City Bank, Estrella, Alexandria, 81 bls. scrap bagging.
A. Siegle Corp., Lindi, Antwerp, 95 bls. cotton waste.
Chase National Bank, Sir John Franklin, Bremen, 99 bls. jute waste.

Old Rope

E. J. Keller Co. Inc., Excambion, Genoa, 90 coils.

Casein

(———), Rio Aguapey, Buenos Aires, 1500 bags.

Woodpulp

Price & Pierce, Ltd., Stockholm, Gothenburg, 500 bls. sulphite pulp.
Pagel Horton & Co., Inc., Stockholm, Gothenburg, 1 cs. woodpulp.

Woodpulp Boards

Jay Madden Corp., Sparreholm, Kotka, 755 bls. (solid white).

Team up with the *DRAPER FELT* to obtain the best results for your requirements.

The DRAPER Felt

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856

CANTON, MASSACHUSETTS

RALPH E. BRIGGS, *Sales Manager*

● BRADFORD WEST, *Pittsfield, Mass.* ● WILLIAM N. CONNOR, *Jr., Canton, Mass.* ● L. H. BREYFOGLE, *Kalamazoo, Mich.* ● ● WALTER A. SALMONSON, *2514 Northeast 59th Ave., Portland, Oregon* ● L. L. GRIFFITHS, *Jr., Kalamazoo, Mich.* ● ● HAROLD H. FISH, *Syracuse, N. Y.* ●

IMPORTS AT NEWARK
Week Ending September 3

Cellulose Sales Co., Tunaho, m, Ostrand, 480 bls. kraft sulphate pulp, 30 bls. dry sulphite pulp.
Cellulose Sales Co., Tunaho, m, Ortviken, 1260 bls. sulphite pulp, 750 bls. dry sulphite pulp.
Cellulose Sales Co., Tunaholm, Stugsund, 1050 bls. airdry sulphite pulp, 250 bls. airdry sulphate pulp.
Cellulose Sales Co., Tunaho, m, Ulvvik, 600 bls. sulphite pulp, 1638 bls. mechanical pulp.
Pulp Sales Corp., Tunaholm, Rauma, 1260 bls. prime bleached strong sulphite pulp, 692 bls. prime unbleached extra strong sulphite pulp, 1020 bls. prime unbleached kraft sulphate pulp.

IMPORTS AT ALBANY
Week Ending September 3

Cellulose Sales Co., Tunaho, m, Ostrand, 2100 bls. kraft sulphate pulp, 600 bls. dry sulphite pulp.
Cellulose Sales Co., Tunaholm, Ortviken, 1200 bls. dry sulphite pulp.
Cellulose Sales Co., Tunaholm, Stugsund, 300 bls. airdry sulphate pulp.
Pagel Horton & Co., Inc., Tunaholm, Gefle, 1787 bls. woodpulp.
Cellulose Sales Co., Tunaholm, Ulvvik, 546 bls. mechanical pulp.
Cellulose Sales Co., Tunaholm, Obbola, 4200 bls. dry sulphate pulp.

IMPORTS AT PORTLAND
Week Ending September 3

Cellulose Sales Co., Tunaholm, Ostrand, 1200 bls. kraft sulphate pulp, 582 bls. dry sulphite pulp.
Cellulose Sales Co., Tunaholm, Stugsund, 1335 bls. airdry sulphite pulp.
Pagel Horton & Co., Inc., Tunaholm, Gefle, 762 bls. woodpulp.
Stora Kopparsberg Corp., Tunaholm, Skutskar, 3361 bls. dry woodpulp.
Cellulose Sales Co., Tunaholm, Ulvvik, 600 bls. sulphite pulp.

IMPORTS AT BOSTON
Week Ending September 3

(———), American Shipper, Bremen, 38 bls. scrap bagging, 5 bls. strings.

IMPORTS AT PHILADELPHIA
Week Ending September 3

Philadelphia Inquirer, Fort Avalon, Cornerbrook, 1546 rolls newsprint.
Penn Wood Co., American Press, Liverpool, 7 bls. wool rags.
Stora Kopparberg Corp., Sparreholm, Skutskar, 538 bls. dry pulp.
Pagel Horton & Co., Inc., Sparreholm, Gefle, 3500 bls. dry sulphite pulp.
Castle & Overton Inc., Sparreholm, Gothenburg, 610 bls. dry sulphite pulp.
Madden Reeve Angel & Co., Inc., Sparreholm, Helsinki, 238 rolls newsprint.
Jay Madden Corp., Sparreholm, Rauma, 120 rolls wrapping paper.
Pulp Sales Corp., Sparreholm, Rauma, 475 bls. prime bleached strong sulphite pulp, 284 bls. prime unbleached extra strong sulphite pulp.
Jay Madden Corp., Sparreholm, Kotka, 553 rolls woodpulp boards.

IMPORTS AT BALTIMORE
Week Ending September 3

Perkins Goodwin & Co., Sparreholm, Norsundet, 1250 bls. dry sulphate pulp.
Pulp Sales Corp., Sparreholm, Kotka, 125 bls. prime bleached sulphite pulp, 325 bls. prime unbleached strong sulphite pulp.
Pulp Sales Corp., Sparreholm, Rauma, 1260 bls. prime strong bleached sulphite pulp.

IMPORTS AT NORFOLK
Week Ending September 3

A. de Vries Trading Corp., Leerdam, Rotterdam, 231 bls. scrap bagging.
New England Waste Co., Hoegh Silverstream, 100 bls. old hessian rags.
Castle & Overton, Inc., Hoegh Silverstream, Bombay, 200 bls. old jute rags.
E. J. Keller Co., Inc., Hoegh Silvertstream, Bombay, 277 bls. old jute rags.

OBITUARIES . . . .

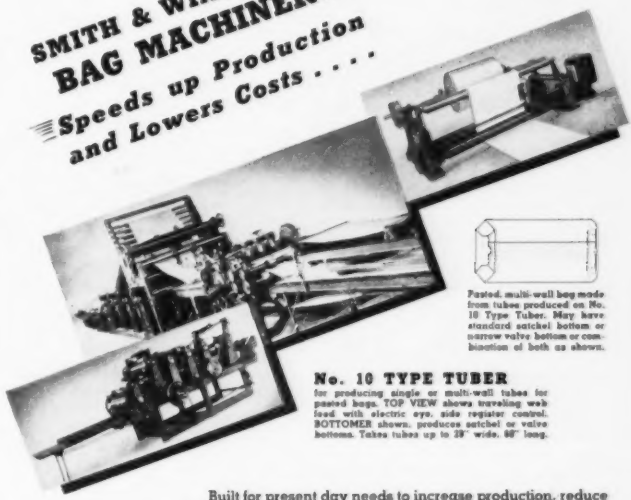
Richard D. Scales, 38, former research director for the Scott Paper Co., Chester, Pa., was killed on September 4 when an automobile in which he was riding struck a truck head-on near Walkerton, Ind. At the time of his death, Mr. Scales was vice-president of Industrial Surveys Co., Chicago.

Michael Kearney, 74, former Canadian International Paper Co., foreman, died in an Ottawa hospital on September 1 following a lengthy illness. He had resided most of his life at Maniwaki until going to Ottawa when he became ill some time ago. Mr. Kearney is survived by his widow, two sons and two daughters.

John Marshall, 58, director of the chemical division of the fabrics and finishes department of E. I. du Pont de Nemours & Co., Wilmington, Del., died in Bryn Mawr hospital on August 27 after an illness of six months. He joined du Pont in 1913.

Harvie Benjamin Coggeshall, 55, sales manager of the John A. Manning Paper Co., Green Island, N. Y., for 33 years, died in Leonard hospital on August 24 after a brief illness. Sur-

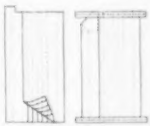
SMITH & WINCHESTER
BAG MACHINERY
Speeds up Production
and Lowers Costs . . . .



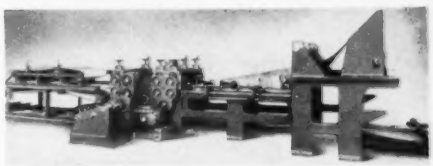
Pasted, multi-wall bag made from tubes produced on No. 10 Type Tuber. May have standard satchel bottom or narrow valve bottom or combination of both as shown.

No. 10 TYPE TUBER
for producing single or multi-wall tubes for pasted bags. TOP VIEW shows traveling web feed with electric eye, side register control. BOTTOMER shown, produces satchel or valve bottoms. Takes tubes up to 29" wide, 60" long.

Built for present day needs to increase production, reduce spoilage and lower unit costs. These machines are custom-made to your requirements and will give continuous, trouble-free service. Increase your profits by speeding up production with Smith & Winchester equipment.



Multi-wall, sewed valve type, gusseted tube made on Smith & Winchester Multi-wall Tuber.



S & W MULTI-WALL TUBER

Up to 100,000 valve notch tubes each 8-hour day may be produced on this Multi-wall Tuber for sewed valve bags. One to 6 walls. Machine built in 2 sizes, 20" and 26" face. Up to 6" gussets. Tubes 28" to 50" long. Improved cross pasting units, photo-electric compensating drives and flying splice paper roll stands can be furnished. If you have a bag problem write us.

THE SMITH & WINCHESTER
Manufacturing Company
South Windham, Conn.

SERVING THE PAPER INDUSTRY SINCE 1821

viving are his widow, Mrs. Sibyl Fowler Coggeshall; his mother, Mrs. Nettie M. Landers; two daughters, Mrs. Schuyler A. Whitney and Mrs. William A. Gross; a son, Paul Fowler Coggeshall; and a brother, Asa O. Coggeshall.

James Logie, 85, former Toronto manager of the E. B. Eddy Co., died August 27, in North Toronto. He is survived by three daughters: Mrs. John W. Arnolf, Mrs. S. F. Urquhart and Mrs. W. S. Dodds; a son, William G. H. Logie; a sister, Mrs. J. Aitken; and a brother, Ben. Logie.

Nicholas Wight Cruger, Southern sales representative for the Patterson Parchment Paper Co., died of a heart attack at Avon Park, Fla., on August 30 while helping to move a storm-uprooted tree from a road. Surviving are his widow, two sons and a daughter.

W. Emmett Bittner, 52, vice-president of purchases of the Diamond Alkali Co., Cleveland, died at Mercy hospital in Pittsburgh on September 2. Surviving him are his widow, Mrs. Mildred Bittner; three sons and two daughters.

John A. Hardisty, 82, who was on the staff of the E. B. Eddy Co. prior to his retirement, died in Ottawa on August 30 following a short illness. He is survived by his widow and one son.

AMERICAN PAPER AND PULP ASSOCIATION'S PRODUCTION RATIO REPORT*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1949		Corresponding Weeks—1948	
July 23	83.2	July 24	103.1
July 30	84.7	July 31	96.5
Aug. 6	83.3	Aug. 7	97.0
Aug. 13	85.9	Aug. 14	96.1
Aug. 20 (Revised)	89.9	Aug. 21	97.7
Aug. 27	93.2	Aug. 28	95.2

COMPARATIVE MONTHLY SUMMARIES

1948						1949	
Jan.	100.1	May	100.5	Oct.	99.1	Jan.	94.6
Feb.	99.8	June	95.7	Nov.	97.1	Feb.	92.8
Mar.	100.8	July	85.3	Dec.	87.1	Mar.	89.1
Apr.	100.8	Aug.	96.8			Apr.	85.1
		Sept.	91.8	Year Avg.	96.2	May	82.7
						June	78.6
						July	‡72.2

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1942	1943	1944	1945	1946	1947	1948	1949
Year to Date	93.5	88.2	87.9	87.8	99.9	103.7	97.5	85.7
Year Average	90.4	87.8	88.1	89.4	101.1	104.3	96.2	

PAPERBOARD OPERATING RATIOS†

Current Weeks—1949		Corresponding Weeks—1948	
July 23	76	July 24	91
July 30	80	July 31	92
Aug. 6	82	Aug. 7	90
Aug. 13	84	Aug. 14	93
Aug. 20	87	Aug. 21	93
Aug. 27	86	Aug. 28	93

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1948	99	100	102	102	100	94	81	92	91	96	94	84	95
1949	88	85	79	79	78	75	64						

* All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

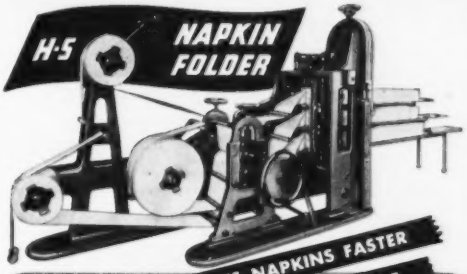
† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

"Announcement to The Paper Industry"

We have recently been granted Letters Patent of The United States Number 2,474,801 issued June 28, 1949, and entitled 'Fibrous Sheets Formed From an Aqueous Suspension of a Mixture of Fibers and Butadiene-Styrene Copolymer'. It is proposed to issue licenses to any responsible paper manufacturer.

LATEX FIBER INDUSTRIES, INC.

BEAVER FALLS, NEW YORK

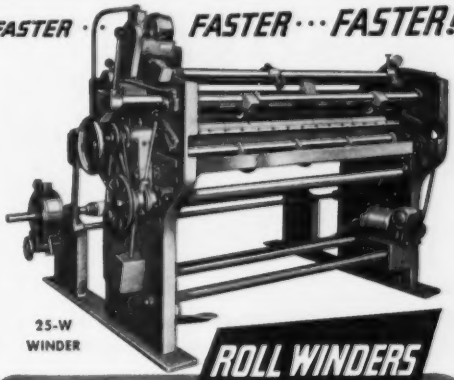


PRODUCES NAPKINS FASTER
. . . THAN EVER BEFORE

More and better napkins with our post-war No. 2-A folder. Makes all folds — quarter fold, eighth fold, sixteenth fold and dispenser fold — on one machine. This unusual versatility, plus our usual quality, makes this multiple duty folder an important addition to your production department. Write for information.

HUDSON-SHARP
MACHINE CO • GREEN BAY • WIS

FASTER · · · FASTER · · · FASTER!



25-W WINDER

ROLL WINDERS

A new, high speed slitter and rewinder for converters of locker paper, shelving paper, household wax rolls, and paper and cellophane gift wraps. Produces perfect rolls with increased production and lower maintenance costs. Write for complete information.

HUDSON-SHARP
MACHINE CO • GREEN BAY • WIS

SINDAR Corporation
Industrial Aromatics and Chemicals

330 West 42nd Street • New York 18, N. Y.

Branches: Philadelphia, Boston, Cincinnati, Detroit, Chicago, Seattle, Los Angeles, Montreal, Toronto

Langston
SLITTERS AND
ROLL WINDERS
Make clean, square-edged rolls that meet exacting specifications.
SAMUEL M. LANGSTON COMPANY, Camden, N. J.

CHAS. T. MAIN, INC.
CONSULTING ENGINEERS
Process Studies, Design, Specifications and Engineering Supervision
PULP AND PAPER MILLS
Steam, Hydraulic and Electrical Engineering
Reports, Consultation and Valuations
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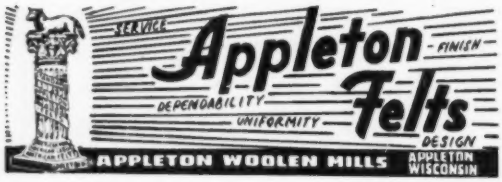
RODERICK O'DONOGHUE
CONSULTING ENGINEER
PULP MILLS — PAPER MILLS
IMPROVED PROCESSES — DESIGNS — REPORTS
420 Lexington Ave. — New York City

MILL COGS
We make a specialty of "Ready Dressed" cogs which are READY TO RUN the moment driven and keyed. Write for circular "G" and instruction sheets free.
The N. P. BOWSHER CO., South Bend, Ind.

HARDY S. FERGUSON & CO.
Consulting Engineers
200 FIFTH AVENUE, NEW YORK 10, N. Y.
Consultation, Reports, Valuation and Designs
for the Construction and Equipment of
Steam and Hydro-Electric Power Plants
Dams and Other Hydraulic Structures
Pulp and Paper Mills



THE RUST ENGINEERING COMPANY
Engineers and Constructors
Pittsburgh, Pennsylvania
Complete Service
for
PULP AND PAPER MILLS—PLANTS AND FACILITIES
DESIGN, CONSTRUCTION, MODERNIZATION

DEINKING — DECOLORIZING
COOKING PROCESSES
K-121-B and K-140
ENGINEERING
THE KINSLEY CHEMICAL COMPANY
4538 WEST 130th STREET — CLEVELAND 11, OHIO

J. E. SIRRINE CO.
Greenville, South Carolina
Engineers
PAPER & PULP MILLS • WASTE DISPOSAL • TEXTILE MILLS •
APPRAISALS • WATER PLANS • STEAM UTILIZATION •
STEAM POWER PLANTS • HYDRO-ELECTRIC • REPORTS

MISCO
STAINLESS STEEL CASTINGS
for all equipment exposed to corrosion by sulphite acids or other corrosive agents
MICHIGAN STEEL CASTING CO., DETROIT 7, MICH.

For Your Engraving Needs Use
NORTHERN ROLLERS
Engraved by
NORTHERN ENGRAVING AND MACHINE COMPANY
Green Bay, Wisconsin

EXCELSIOR Woolen Co. KNOX Camden Me. FELTS & JACKETS

"EXCELSIOR" FELTS
Manufacturers of Felts of Superior Quality
for Every Grade of Pulp and Paper
KNOX WOOLEN COMPANY
CAMDEN, MAINE

WEST VIRGINIA PULP and PAPER COMPANY

230 Park Ave.
New York 17, N. Y.

35 East Wacker Drive
Chicago 1, Ill.

Public Ledger Building
Philadelphia 6, Pa.

503 Market St.
San Francisco 5, Calif.

Manufacturers of West Virginia Mill Brand Papers

SUPERCALENDERED	ENVELOPE
ENGLISH FINISH	MIMEOGRAPH
LITHOGRAPH	INDEX BRISTOL
LABEL	POST CARD
OFFSET	COVER
EGGSHELL	CUP AND CONTAINER
MUSIC	FILE FOLDER
POSTER	TAG
BOND	COATED
WRITING	MACHINE COATED

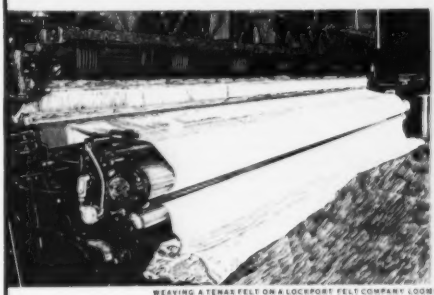
KRAFT CONVERTING AND KRAFT ENVELOPE
KRAFT LINER BOARD

MILLS

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

TENAX FELTS

—are made for YOUR paper machines—for better—more efficient —more economical operation.



WEAVING A TENAX FELT ON A LOCKPORT FELT COMPANY LOOM

The skill and experience of more than 50 years are woven into every Tenax Felt made to serve the paper industry.

LOCKPORT FELT COMPANY
NEWFANE • NEW YORK

Cowles NU-NAP
FELT WASHING DETERGENT

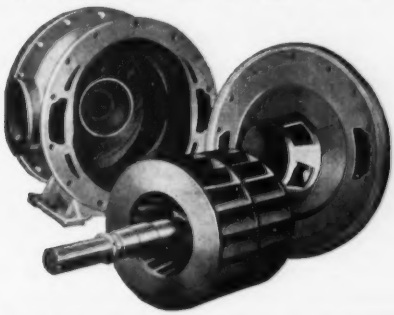
Cowles NU-NAP contains a new combination of products and a brand new idea in detergent action. NU-NAP does an outstanding washing job on paper machine felts — both on and off the machine. NU-NAP will give extra life to your felts—it leaves them unusually clean—fluffy and absorbent.

Use NU-NAP for dependable—safe—free rinsing felt washing.

WRITE FOR COMPLETE INFORMATION
AND PRICES
IMMEDIATE DELIVERIES

COWLES CHEMICAL COMPANY
Formerly The Cowles Detergent Company
PAPER CHEMICAL DIVISION
7016 EUCLID AVE. CLEVELAND 3, OHIO

SIMPLICITY



NASH VACUUM PUMPS HAVE ONE MOVING PART

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

CLEARING HOUSE

HELP WANTED

In view of pending promotion of Sales Manager to Assistant of President, position as Sales Manager in our Company will soon be open. Mill capacity is 25,000 tons per year of tissue and other lightweight papers, both straight and machine creped. We look for a man with solid knowledge of sales of converted tissue specialties, age 35-40 or thereabout, and with genuine interest in sales and sales promotion work, to act as Assistant Sales Manager with speedy chance to be promoted to Sales Manager. Please write with full particulars to Fernstrom Paper Mills, Inc., Pomona, California, attention of President, who will treat applications with discretion S-8

ENVELOPE ADJUSTER

Experienced adjuster on wide range, SO and plunger machines. Permanent position with excellent opportunity for advancement. State age, experience and salary expected. Address Box 49-439 care Paper Trade Journal. S-29

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (29 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, INC.
117 Dun Bldg., Buffalo 2, N. Y.
TF

PAPER CHEMIST

Man familiar with soft papers used in rubber saturating, wanted by paper manufacturer. Applicant must be experienced and willing to work. Outline educational background, give a list of past employers and nature of work for each, together with references and salary expected. All replies will be held in strict confidence. Address Box 49-404 care of Paper Trade Journal. S-8

FACIAL TISSUE—Consumer representative and quality control expert. Opportunity for man or woman with experience in facial tissue line. Address Box 49-438 care Paper Trade Journal. S-8

HELP WANTED

MEN WANTED
POSITIONS OPEN

Sales manager, also assistant sales manager, tissue and other light weight papers; mechanical engineering graduate experienced in hydraulic engineering as assistant to plant engineer in tissue mill.

Two chemists for mills in New England; plant engineers and master mechanics; stationery salesman acquainted with department stores and stationers in Southern New England.

We invite correspondence (confidential) with mills seeking executives and with executives seeking new positions.

CHARLES P. RAYMOND SERVICE, INC.
294 Washington St., Boston 8, Mass. S-8

WANTED

First class Paper Mill Superintendent for two machine mill.

Must have experience on straight Fourdrinier and Cylinder machines.

Also experience using old paper stock, making Kraft Papers, Corrugated Material, Boxboard specialties, etc.

Address all replies to

James J. (Shorty) Andrews
Wallosmsac Paper Mills, Inc.
P.O. North Hoosick, New York TF

SALESMAN TO PAPER MILLS

Large oil and chemical firm has sales opening for young man, selling oils and waxes to mills, converters and paper specialty firms for impregnation, lamination, etc. Technical training and/or sales experience preferred but not essential. Will headquarter in Chicago. Straight salary. Excellent opportunity for permanent position. State in complete detail, education, previous experience, etc. Box 49-425 care Paper Trade Journal. S-8

WANTED—Young man experienced in manufacture and sales vulcanized fibre. Address Box 49-341 care Paper Trade Journal. TF

TOUR BOSS—Thoroughly experienced on all grades of folding board. Excellent compensation and further opportunity in one-machine mill. Only applicants outlining past employers and full qualifications will be considered. Address Box 49-435 care Paper Trade Journal. S-29

MACHINE TENDER—Fully experienced on all folding grades. Good steady job with excellent opportunity in one-machine mill. Address Box 49-436 care Paper Trade Journal. S-29

SITUATIONS WANTED

CHEMIST—15 years Chief Chemist paper mill. Experienced color work, past four years resin research. Seeks new connection, laboratory or sales. Address Box 49-440 care Paper Trade Journal. S-15

CHEMIST—Veteran, 29, good personality, wants position plant chemist, product development and sales. Address Box 49-437 care Paper Trade Journal. S-15

SITUATIONS WANTED

SUPERINTENDENT
30 years of practical experience

manufacturing highest grades light and heavy weight papers on modern high speed cylinder and Fourdrinier machines high grade folding box board; kraft; book and bond specialties from sulphite, sulphate, groundwood, de-inked papers. Can get quality and production. Best of reference. Box 49-384, care of Paper Trade Journal S-8

SUPERINTENDENT or Asst. Supt.—Age 39, desires to make change. 15 years experience on high speed Fourdrinier with Yankee Dryer machines, making toilet tissue, facial tissue, towels and napkins. Address Box 49-422 care Paper Trade Journal. S-15

POSITION WANTED—Master Mechanic or Mechanical Superintendent in Paper or Pulp Mill. 36 years experience. Can furnish A-1 references. Can handle construction work. Sober, not afraid of hard work. Can organize personnel and get results. Address Box 49-424 care Paper Trade Journal. S-15

TOUR BOSS—Expert on color. Eleven years with leading fine mill. Knows paper thoroughly. Address Box 49-426 care Paper Trade Journal. S-8

FOR SALE

GOOD VALUES—NEW & USED

34" Beck Sheeter, one year old.
58" and 78" Hamblet Sheeters.
34" Camachine No. 6 Slitter.
38" Hobbs and 34" Inman shear cut Slitters—very cheap.
39" Chandler & Price Automatic Power Paper Cutter.
New 44" National Auto. Power Cutters and 36" National Hydraulics.
Baling Presses—both hand and power.
Brackett 3-knife Trimmer.
28 x 41 Thomson Cutter & Creaser.

THOMAS W. HALL COMPANY, Inc.
120 West 42nd St., New York 18
(Plant at Stamford, Conn.)
TF

MISC. FOR SALE

106" 2-Bar Rotary Slitter; 74" Knowlton Cut Off Knife; 7 Pairs Mill Stands for 72" Diam. Rolls; 25 H. P. Var Sp. A. C. Motor with Reeves Drive & Controls; 2 Tanks 425 gal. cap.; 106" Beloit 3-Press Roller Station.

Address Box 49-441, care Paper Trade Journal. S-8

FOR SALE—106" Beloit 4 Ply Board Paster with 72" cut-off knife or with large knife if necessary. Priced right for immediate sale. Address Box 49-246 care Paper Trade Journal TF

RATES FOR CLASSIFIED ADVERTISING

HELP WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

SITUATIONS WANTED—10c a word, double rate for heavy face type. Minimum charge $2.50. If repeated ½ rate will be charged for each consecutive repetition.

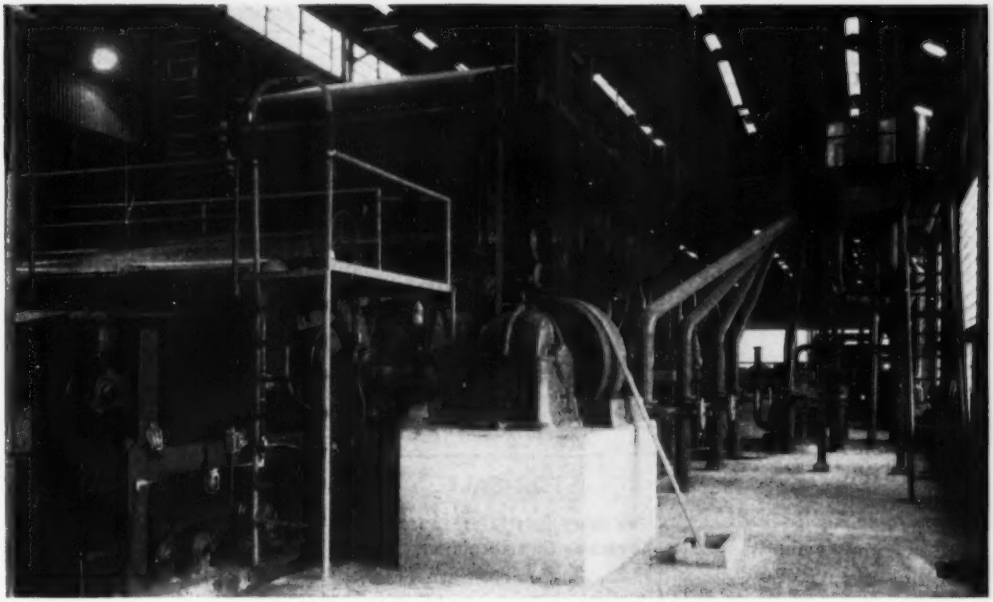
FOR SALE—10c a word. Double rate for heavy face type. Minimum charge $2.50.

WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

OPPORTUNITIES—10c a word. Double rate for heavy face type. Minimum charge $2.50.

Classified advertising space may also be purchased at $5.00 per single column inch. All classified advertisements are payable in advance. If box number is used—70 cents additional.

Address replies to advertisements appearing under Box Numbers in care of PAPER TRADE JOURNAL, 15 West 47th Street, New York 19, N. Y.



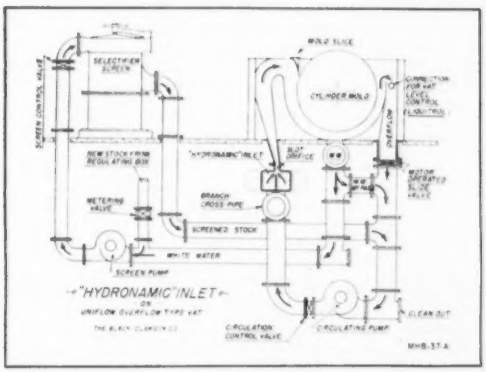
LATEST IN VATS "INLET"-EQUIPPED

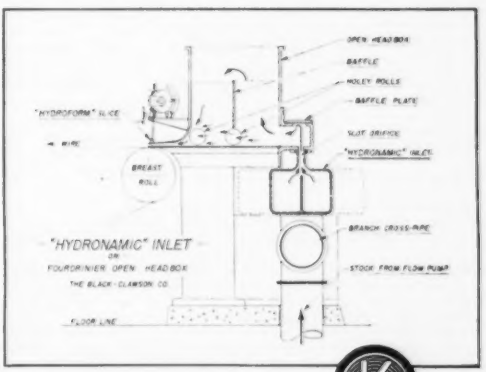
One of the most outstanding mills of the post-war period is that of the Fairfield Paper & Container Company, Baltimore, Ohio.

Particularly prominent features of the Fairfield development are: (1) Suction presses mounted atop the vats. (2) "HYDRONAMIC" Inlets on all vats. (3) Remote control operation of practically all equipment by pushing a button at some convenient panel board.

Note particularly item No. 2—"'HYDRONAMIC' Inlets on all vats"—still further evidence that the Black-Clawson "Inlet" is fast gaining in favor.

Have us tell *you* more about it.





Black-Clawson

KONLER SYSTEM EQUIPMENT

PRODUCT OF DILTS

HAMILTON, OHIO

Divisions: SHARTLE BROS. MACHINE COMPANY, MIDDLETOWN, OHIO

DILTS MACHINE WORKS, FULTON, NEW YORK

Western Sales Office: Mayer Building, Portland, Oregon

Associate: Alexander Fleck Limited, Ottawa, Ontario, Canada

Subsidiary: B-C International, Ltd., 16 Catherine Place, Victoria, London S.W.1, England

FOR SALE
A Paper Treating Machine

This consists of the following:

Unwind stand: one set of press rolls with pan, bottom rubber covered, top gun metal, 16 x 84".

First section of five dryers 36 x 82" with bottom felt and Lodding doctors and spring roll.

Size press, rolls rubber covered and gun metal 16 x 84".

Second dryer section consisting of 18 dryers 36 x 82", with bottom felt, Lodding doctors and spring roll and frames for top felt.

80" Farrel calender with levers and weights, flexible doctors. Bottom roll 18" diameter, with 10" journals; one 12" roll; three 8" rolls and one 16" roll.

Open side Rice Barton reel with drums 18 x 78", 34" centers.

Two drum Bagley & Sewall winder with slitter part, drums 12½" x 94". Fourteen sets of Koegel slitters, anti friction.

Three spare press rolls and one spare dryer with gears.

Machine is driven by Reliance drive with motor generator set which was put in new in 1942 at a cost of about $14,000.00.

Equipment has been operating up to speed of 450 FPM, all set up, in very good condition.

Price $15,000.00. If interested telephone or wire us.

FRANK H. DAVIS COMPANY, 175 Richdale Avenue, Cambridge, Massachusetts

Telephone Trowbridge 6-0366

TF

FOR SALE

1—Triple Effect Zaremba Evaporator, 84" dia., each effect 1200 sq. ft. of heating surface, 440—1" steel tubes, 2 tile traps, 2 moisture separators, interconnecting piping and barometric condenser, traps and 3 liquid level controllers. Vacuum pumps are not included. Available for immediate shipment. May be inspected at any time.

2—#420 Black & Clawson 10" x 16" Triplex Geared Stock Pumps, bronze fitted, belt drive, 30" x 10" pulley.

2—Pusey & Jones Triplex Stock Pumps, 10" dia. cylinder, 20" stroke, 25 revolutions of crank shaft will throw 469 gallons. Pumps driven on jack shaft arrangement, gear and pinion drive.

1—Duo-arrangement comprising Van de Carr patent stock inlet combined with 2 standard slices of 14" and 8" high standard design with center and end adjustment supports on adjustable side frames. Stock inlet Pusey & Jones design, 30" high, equipped with motor driven direct-connected perforated distributor roll, adjustable device for leveling the sheet, adjustable deckle in-plates, gauge glass and necessary supporting frames.

3—Washer Cylinders, 42" diameter x 84" face.

24—Brass Table Rolls, 7" dia. x 196" face, equipped with Timken roller bearings #375-372.

Address Box 49-430 care Paper Trade Journal. S-8

FOR SALE

2—Horizontal Rotary Digesters, 8' 6" I.D. x 9' 6½", volume 450 cu. ft., complete with insulation, glands, bearings, drive gears, and 5 HP ball bearing gearhead splashproof motors. Shell, heads, manways, and covers of 1⅜" A.S.T.M. A-70 Fire Box Quality Steel lined with 7/64" type #317 stainless steel alloy. Maximum working pressure 250 lbs. per sq. in. gauge. Working temperature 380 to 390 degrees —F., Maximum test pressure 500 lbs. per sq. in. gauge.

1—General Electric Motor, 50 HP, 2200 volts, 870 RPM, Serial 1378682 complete with starter.

7—Model 2 Bird Screens, complete with plates, showers, and drive less motor.

Write Box 49-407, care Paper Trade Journal. S-8

FOR SALE

Two Heavy Duty 72" #10 Model 5 Camachine Slitter Rewinders.

Complete with new style crush cut slitting units and water-cooled mill roll brakes. All in perfect condition ready for use.

Extra slitting units available.

Box No. 49-378 care Paper Trade Journal

S-8

FOR SALE

Centrifugal Separator and Screen. Thickener Washer. Mould 4' in dia. by 112" long. Both machines have barely been used. They have become unnecessary on account of changes in mill. Will sacrifice. Complete details and prices cheerfully submitted by General Paper Co., Coatesville, Pa., R. D. 3. S-8

FOR SALE OR LEASE

Small paper mill with cylinder machine. Situated advantageously to sources of raw material and sales outlet. Ample room for converting plant in same building. Terms. Address Box 49-357, care Paper Trade Journal.

TF

FOR SALE

60" Hamblet Sheeter, single knife, with 3 sets of slitters, Erie Layboy and 10-roll double deck Back-stand, and shafts.

Immediately Available.

THOMAS W. HALL COMPANY, Inc.
Stamford, Conn. S-15

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon, Laboratory Coating and Treating Machines. New improvement. MAYER MACHINE COMPANY, Inc., 1313 Buffalo Road, Rochester 11, N. Y. TF

MACHINERY FOR SALE—Paper Bag Machines, Square, Flat and self opening type. Good condition. Address Box 49-405 care Paper Trade Journal. S-8

FOR SALE—COMBINATION PASTER & LAMINATOR — 64" wide 4 ply Board Paster with or without 2 ply Paper Lining Stations. Sheet lengths from 30" to 120" in max. thickness .250 (¼"). Address Box 49-432 care Paper Trade Journal. S-8

FOR SALE

3—Pusey & Jones Deckers, Cylinder molds 42" diameter x 146" face, iron end vats, anti friction bearings, 18" rubber covered couch rolls.

J. J. ROSS COMPANY

250 Frelinghuysen Ave., Newark, N. J.
Telephone Bigelow—3-3720

S-8

FOR SALE

6—Paper Machine Drives, 75 h. p., ratio 8 to 1. All enclosed, with automatic clutches.

A-1 condition.

J. J. ROSS COMPANY

250 Frelinghuysen Ave., Newark, N. J.
Telephone Bigelow 3-3720

S-8

FOR SALE—30 H.P. General Electric type K.T. Motor, 220 volt 60 cycle 3 phase Alternating, 965 R.P.M. with starting compensator. Address Box 49-431 care Paper Trade Journal. S-15

FOR SALE—Six Globe Rotaries—14' diameter. Good condition. Need room. Will sacrifice. Sangamon Paper Mills, Inc., 137 W. Pershing Road, Chicago, 9, Ill. S-8

FOR SALE—New 64" Maier Rotary Cut-Off Knife; 100" New Knowlton Bar Creaser. GREGGORY, INC., 205 N. Wabash Ave., Chicago, 1, Ill. S-8

WANTED

Interested in Buying
GENERAL PAPER HOUSE

located in either New York Area or Midwest. Write giving full details as to purchase price, Inventory and other important details.

Address Box 49-434, care Paper Trade Journal. S-22

FOR SALE

1—Plain Extractor Roll 28" diameter x 150" face.
1—Suction Extractor Roll 22" diameter x 150" face, complete with L-17 Nash Vacuum Pump.

BARKERS
1—9' Carthage Disc Barker

BEATERS
1—**800 lb.** Beater—iron tub

BEATERS (Laboratory)
2—Dilts Iron Tub Laboratory Beaters. Beater rolls 14" diameter x 10¾" face, including motors.

BRASS FELT ROLLS
9—4" diameter x 140" face (with bearings)

BREAST ROLLS
1—100" x 14".
8—114" x 14".
1—120" x 14"

CALENDER STACKS
1—72" 5 roll Calendar Stack.
1—76" 7 roll calender stack (heavy duty).

CHIPPERS
2—96" Murray 4 knife Chippers.

CRUSHER & HAMMERMILL
1—Murray Chip Crusher.
1—Jeffrey Hammermill.

CYLINDER MOULDS
1—36" diameter x 80" face.
1—39" diameter x 72" face.
1—38" diameter x 79" face.

DECKERS
1—Decker—48" diameter x 84" cylinder mold
3—Pusey & Jones Deckers Cylinder molds 42 x 146, anti friction bearings, including rubber covered couch rolls.

DRIVES
2—#4 Reeves Drives.
1—#2 Reeves Drive.
1—Smith & Winchester mortise gear Drive.
1—Foote—7½ h.p. Speed Reducer (Ratio 240 to 1)
2—Smith & Winchester Mortise Gear Drives with 26" diameter clutches—Ratio 8 to 1.
6—Enclosed drives. 75 h.p., ratio 8 to 1. Complete.

DRIVES (Angle)
1—General Machine Company 16 : 1.
1—Philadelphia 50:1 — 1 h.p. — 1200 r.p.m.
1—Philadelphia 21½:1 — 3 h.p. — 1200 r.p.m.

V-BELT DRIVE
(1—21½" diameter x 7½" face, 5 groove.
(1—16½" diameter x 7½" face, 5 groove.
((With clutch).

DRYERS
14—48" diameter x 112 face.
30—36" diameter x 102" face.
50—42" diameter x 126" face.
9—36" diameter x 72½" face, with gears and bearings.
1—48" diameter x 91" face.
2—25" x 120" (Baby Dryers).
2—36" x 143".
1—24" x 130".
1—60" diameter x 47" face.

EMBOSSER
1—84" Hudson Sharp Toilet Embosser. Spare engraved roll.

FELT ROLLS
20 Felt Rolls—Brass covered 8" to 12" diameter.

FILTERS
3—IMPCO Lime Sludge Filters.

FLAT SCREENS
1—6 plate Shartle Flat Screen.
1—8 plate Packer Type Flat Screen.
2—12 Plate Murray Dunbar Flat Screens.
2—14 plate Sandy Hill. (Never used.)

FRICTION CALENDERS
2—30" Waldron.
2—38" Waldron.

HYDRAULIC PRESS
1—Watson-Stillman Co. (Platen 24" x 24").

JORDANS
2—Noble and Wood—Mammoth Type
1—Emerson Jordan—25 to 30 tons capacity—iron plug including new spare iron plug.

MISCELLANEOUS
1—Caustic Mixer.

MOTORS
2—5 h.p. ball bearing—splash proof motors—3/60/440, 1160 r.p.m.
1—½ h.p. ball bearing—splash proof gearhead motor—3/60/440, 1725 r.p.m.
1—2 h.p. ball bearing—splash proof gearhead motor—3/60/440, 1725 r.p.m.

PRESSES
4 Sections of presses approximately 24" diameter. Rubber and Bronze.

PRESS ROLLS
Various sizes.

PRINTING MACHINE
1—3 color 40" Rotary Cottrell Printing Machine, A-1 condition, provision for 2 more colors.

PULLEYS
Various cone and assorted pulleys.

PULPER
1—Jones Pulper. Complete with motor and drive.

PUMPS
2—Weil Pump Co.—100 g.p.m.—100 P.S.I. including 15 h.p. motors (new equipment).
1—Bell & Gossett—300 g.p.m.—120' head—including 15 h.p. motor.
1—Goulds Sump Pump—50 g.p.m.—20' head—including motor.
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

REEL
1—72" Beloit Reel.

ROLLS
900—Brass tube-steel tube—rubber covered iron rolls—various sizes.

ROTARY SCREENS
1—#2 Bird Rotary Screen.
1—#2A Bird Rotary Screen.

SAVEALLS
1—#5 Bird Saveall.
1—Saveall—48" diameter x 84" cylinder mold.
3—Pusey & Jones Savealls. Cylinder molds 42 x 146, anti friction bearings, including rubber covered couch rolls.

SCREEN PLATES
20 Plates cut .016.
10 Plates cut .008.
Also other sizes and cuts in stock.

SHEETER
1—136" Moore & White Sheeter, duplex, with layboy.

SLITTERS AND WINDERS
1—208" Cameron—Type 20.
1—72" Cameron—Type 28-8-7-D (shear cut)
1—62" Cameron—Type 10-10-AJ.
1—50" Cameron—Type 24-2L.
1—42" Cameron—Type 40-4-B.
1—42" Cameron—Type 24-2A.
1—42" Cameron—Type 9-5.
1—42" Cameron Constant Tension, with pneumatic control.
1—39" Langston.
1—62" Cameron—Type 6 (Shear cut).
1—115" 2 drum Waldron

SQUEEZE ROLL
1—Rubber Squeeze Rolls, 20¾" diameter x 102" face.

STOCK PUMPS
1—10 x 20 Shartle Duplex.
4—7 x 16 Shartle Duplex.
Numerous other Centrifugal Stock Pumps Advise as to your requirements.

SUCTION BOXES
5—Suction Boxes, 82" drilled face x 6" wide.

SUCTION COUCH ROLL
1—24⅞" diameter x 160" drilled face.
1—Sandusky 14⅝" diameter x 103" drilled face.

SUCTION PRESS ROLL
1—Downingtown Suction Press Roll 24" diameter x 110" face.

SUCTION PRESS ROLL SHELL (Only)
1—29¾" diameter x 134" drilled face.

SUPERCALENDER STACK
1—54" 9 roll supercalender stack, completely rebuilt including motors, etc.

TABLE ROLLS
40—Table Rolls 82" face x 3" diameter.

TOILET and TOWEL MACHINES
2—Dietz 81" Toilet & Towel Machines.

TRIMMER
1—56" Smith & Winchester—Undercut.

TUNNEL DRYERS
2—Proctor & Schwartz Tunnel Dryers, 10 ton and 5 ton capacity.

TURBINE
1—150 h.p. Westinghouse Type C-Gear Turbine (Recently rebuilt).

VACUUM PUMPS
2—H7 Nash Vacuum Pumps.
1—#4 Nash Hytor Vacuum Pump.
1—L5 Nash Vacuum Pump.
1—L-7 Nash Vacuum Pump

VAT
1—Iron end Vat only, for decker or saveall, suitable for cylinder mold 36 x 130.

YANKEE DRYERS
1—8' diameter x 175" face.

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Wanted Cylinder and Fourdrinier Machines (complete mills).

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S-8

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Wanted: 17 x 17 Quarterfold Plain or Embossing Napkin Folder. Give full specifications in reply to Box 49-420 care Paper Trade Journal.
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TO TRIM APPROXIMATELY
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Principals only.
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WANTED

WANTED

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care of Paper Trade Journal S-8

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GOVERNMENT BIDS

PROPOSALS

FOR FURNISHING

PAPER FOR THE U. S. GOVERNMENT PRINTING OFFICE

SEALED PROPOSALS will be received until 10 a. m., September 12, 1949, in the room of the Joint Committee on Printing, in the Capitol, Washington, D. C., for furnishing the paper for the public printing and binding, and blank paper for the use of the Government departments and establishments in the District of Columbia, for the term of three months, beginning October 1, 1949; deliveries to be f. o. b. Government Printing Office Warehouse, or warehouse siding, Washington, D. C. The proposals will be opened in the presence of and the award of contracts made by the Joint Committee on Printing to the lowest and best bidders for the interest of the Government whose bids are in conformity with the requirements of the proposal. The Committee reserves the right to reject any or all bids, or to accept any bid or any part and reject the other part, if, in its opinion, such action would be in the interest of the Government.

Blank proposals - containing the instructions, schedules, and specifications may be obtained by addressing John J. Deviny, Public Printer, Washington 25, D. C.

Contracts will be entered into for supplying the quantities required, whether more or less than the estimates, as provided in paragraph 15 of the instructions.

The approximate estimated quantities set forth in detail in the schedule comprise:

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In cases where more than 1,000 reams are called for, proposals will be received for 1,000 reams or more.

By direction of the Joint Committee on Printing.

JOHN J. DEVINY,
Public Printer.

WASHINGTON, D. C.,
August 22, 1949. S-8

THE MILL NUMBER of

PAPER TRADE JOURNAL

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SEPTEMBER 22, 1949

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Hardinge Company, Inc.
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Valley Iron Works Co.

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Valley Iron Works Co.

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Downingtown Mfg. Co.
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Morden Machines Co.
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Smith & Winchester Mfg. Co.
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Shartle Brothers Machine Co.
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E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F
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Niagara Alkali Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co

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Kalamazoo Tank & Silo Co
Moore & White Co.
Murray Mfg. Co., D. J
Walworth Company

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The Biggs Boiler Works Co
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Shartle Brothers Machine Co
Smith & Winchester Mfg Co
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Waldron Corp., John

CARRIER ROPE
Williams-Gray Co.

CASEIN
American Cyanamid Co., Industrial Chem. Div.
Hercules Powder Co., Inc

CASTINGS
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Appleton Machine Co
American Manganese, Steel Div
Babcock & Wilcox Co.
Black-Clawson Company
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The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
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Waldron Corp., John

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Kinsley Chemical Co.
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DIRTEC
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Nopco Chemical Co.
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Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Bird Machine Company
Black-Clawson Company
Lodding Engrg. Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

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Hardinge Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
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Ross Paper Machy. Co.
The Sand Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
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DRIVES
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Bird Machine Co.
Black-Clawson Company
Chain Belt Company
Davis, Frank H., Co.
Dilts Machine Works
Downingtown Mfg. Co.
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Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Syco Mfg. Co.
Valley Iron Works Co.
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DRYER DRAINAGE
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General Dyestuffs Corp.
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The Appleton Machine Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Midvale Company
Northern Engraving & Mch. Co
B. F. Perkins & Son, Inc.
John Waldron Corp.

EMULSIFIERS
Adell Chemical Company
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.

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Davis Engrg. Corp.
Foster Wheeler Corp.
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

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General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

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Hardinge Company, Inc.
Merrick Scale Mfg. Co.
Leeds & Northrup

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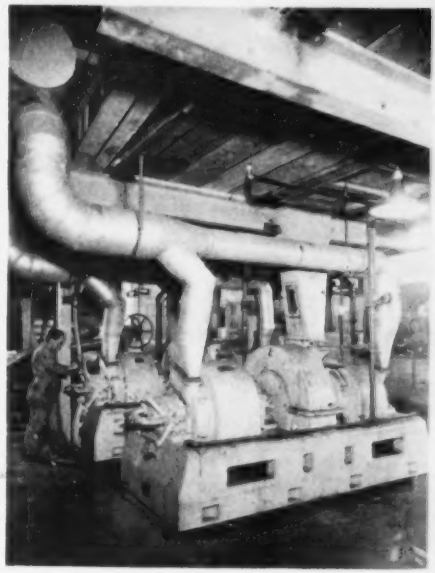
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bulkley, Dunton Pulp Co., Inc.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morey Paper Mill Supply Co
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co.



Bauer **PULPERS**

USED FOR REFINING STOCK AT NEW WALL-BOARD MILL

THE PHOTO shows two Bauer 150-hp Pulpers which do the final refining of stock for wall-board at a new mill in the Northwest.

Bauer Pulpers are widely used in pulp, paper, and board mills throughout the world. The double revolving discs produce long, pliable, free fibers. An idea of the versatility of these machines can be gained from the following list of materials refined for a large variety of products:

- **Raw, steamed, and cooked chips from soft and hard woods for insulating board, wall-board, hard board, corrugated board, plastics, roofing felt.**
- **Groundwood rejects for newsprint, special wrappers, and boards.**
- **Sulphite and soda pulps for tissue, book, and other grades of paper.**
- **Kraft knotter and screen rejects for inclusion in kraft board and kraft bag papers.**
- **Sulphite knotter and screen rejects for newsprint, boards, and specialties.**
- **Waste papers of all kinds (including wet-strength) for paper board, auto panel board, wall-board filler, etc.**
- **Bagasse, licorice root, bamboo, straw, and many agricultural residues for insulating and building boards, special papers, paper boards, felt, etc.**

Complete mechanical and processing information will be gladly furnished upon request. Anyone with special pulping and refining problems is invited to take advantage of our laboratory and testing facilities.

THE BAUER BROS. CO.

SPRINGFIELD, OHIO

WHERE TO BUY

FELT CLEANERS
Adell Chemical Company
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Nopco Chemical Co.

FELT CONDITIONERS
Bird Machine Co.

FELT GUIDES
Black-Clawson Co.
Frank W. Egan & Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Cyanamid Company, Industrial Chemicals Division
W. H. Loomis Talc Corp.
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Witco Chemical Co.

FILTERS
Bird Machine Company
Cochrane Corp.
Hardinge Company, Inc.
Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
Witco Chemical Co.
Walworth Company

FITTINGS
Crane Company
The Kuhns Bros. Co.
Phoenix Products Co.
Walworth Company

FLEXIBLE COUPLINGS
Ajax Flexible Coupling Co.
John Waldron Corp.

FLOORING, GRATING AND TREADS
The Goodyear Tire & Rubber Company
Norton Co.

FLOW BOXES, STAINLESS-CLAD
Lukens Steel Co.

FORMING MACHINES
Black-Clawson Co.
Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
Oliver United Filters, Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

FREENESS TESTERS
Testing Machines, Inc.

GASKETS
The Goodyear Tire & Rubber Company

GEARS
American Manganese, Steel Div.
Black-Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Suburban Machine Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

GRINDERS
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company

GUIDES, WEB
Askania Regulator Company
The Moore & White Co.
Mount Hope Machinery Co.
Round Brook Engrg. Co.
John Waldron Corp.

GUMMING MACHINES
Dilts Machine Works.

GUMS
National Starch Products Inc.
Stein-Hall Co., Inc.

HEADS
Babcock & Wilcox Co.
Lukens Steel Company

HEAT EXCHANGERS AND RECOVERY SYSTEMS
William Allen Son's Company
Davis Engrg. Corp.
Foster Wheeler Corp.
Midwest-Fulton Machine Co.
Stickle Steam Specialties Co.
Westinghouse Electric Corp.

HEATING, VENTILATING & AIR CONDITIONING
The Appleton Machine Co.
Armstrong Machine Works
Cochrane Corp.
Davis Engrg. Corp.
E. D. Jones & Sons Co.
General Electric Co.
Leeds & Northrup
Minneapolis-Honeywell Regulator Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

HOSE (Air, Water, Suction, etc.
The Goodyear Tire & Rubber Company

IMPREGNANTS
American Anode Div., The B F. Goodrich Chem. Co.

INDENTING MACHINES
Dilts Machine Works.

INDUSTRIAL TRACTORS
Clark Equipt. Co., Clark Trac tractor Div.
Towmotor Corp.

INK GRAVURE
Gotham Ink & Color Co.

INSTRUMENTS, TESTING AND MEASURING
Askania Regulator Company
Bauer Brothers Co.
N. P. Bowaher
The Bristol Company
The Brown Instrument Co.
E. J. Cady Company
Cochrane Corp.
The Foxboro Company
General Electric Company
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Photovolt Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Williams Apparatus Co., Inc.

JOINTS
Johnson Corp.
Perfecting Service Corp.

JORDAN FILLINGS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
Heppenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Taylor Stiles & Co.
Valley Iron Works Co.

KNOT BORING MACHINES
DeZurik Shower Company

LABORATORIES
Timber Engrg. Co.

LABORATORY EQUIPMENT
William Allen Son's Company
Appleton Machine Co.
Bauer Brothers Co.
The Biggs Boiler Works Co.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.

LAMINATING MACHINES
Dilts Machine Works.

LAY BOYS
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.
Suburban Machine Co.

LUBRICANTS
Sinclair Refining Co.
Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

MAGAZINE REELS
Dilts Machine Works (Kohler System).

MATERIALS HANDLING
Cleveland Crane & Engrg. Co.
Frank G. Hough Co.
The Wellman Engrg. Co.

MICROMETERS & CALIPERS
E. J. Cady Co.
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Co.
Testing Machines, Inc.
Walker-Goulard-Plehn Co.

MOISTURE CONTENT CONTROL
Askania Regulator Company
Midwest-Fulton Machine Co.
Stickle Steam Specialties Co.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
Chicago Electric Company
Fairbanks, Morse & Co.
General Electric Company
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.

NICKEL AND NICKEL ALLOYS
The International Nickel Co.

NOZZLES
Link Belt Company

PACKING BOXES
Johnson Corporation
The Moore & White Co.
Perfecting Service Corp.
Shartle Brothers Machine Co.

PAINT
American Marietta Co., Valdura Division

PAPER MACHINES
Bagley & Sewall Co.
Black-Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Moore & White Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.
Suburban Machine Co.

PASTING MACHINES
Black-Clawson Company
Davis, Frank H., Co.
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John

PENSTOCKS
The Biggs Boiler Works Co.

PERFORATED METAL
Allis-Chalmers Mfg. Co.

PIPE
American Cast Iron Pipe Co.
Armco Drainage & Metal Products, Inc.
Babcock & Wilcox Co.
Crane Company
Michigan Pipe Co.
Michigan Steel Casting Co.
National Tube Co.
Walworth Company
Youngstown Welding & Engrg. Co.

PIPE FITTINGS
American Cast Iron Pipe Co.
The American Rolling Mill Co.
Crane Company
Ladish Company
Michigan Steel Casting Co.
Phoenix Products Co.
Walworth Co.

PIPE MARKERS
W. H. Brady Co.

PITCH CONTROL
General Dyestuff Corp.
Monsanto Chemical Company
Rohm & Haas Co.

PLATERS
Gibbs-Brower Company, Inc
Perkins & Son, Inc., B. F.

PLATES
Armco Steel Corp.
Babcock & Wilcox Co.
The Biggs Boiler Works Co.
J. O. Ross Engrg. Corp.
Lukenweld
Lukens Steel Company
Timken Roller Bearing Co.

PLUGS
The Appleton Machine Co.
Black-Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

PRECISION SAMPLE CUTTER
Testing Machines, Inc.

PRESERVATIVES
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.

PRESSURE VESSELS, STEEL AND ALLOY
William Allen Son's Company
Babcock & Wilcox Co.
The Biggs Boiler Works Co.
Combustion Engrg. Co., Inc.
Foster Wheeler Corp.
The Midvale Company

PRESSES
Black-Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
The Moore & White Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

PULP CLASSIFIER
The Bauer Bros. Co.

PULP STOCK VALVES
Crane Company
Record Fdy. & Mach. Co.
Shartle Bros. Mach. Co.

PULPERS
American Paper Mchy. & Engrg. Works, Inc.
Bauer Brothers Co.
Dilts Machine Works
E. D. Jones & Sons Co.
Midwest-Fulton Machine Co.
Shartle Brothers Machine Co.

PULPS
Brown Company
Bulkley, Dunton Pulp Co., Inc.
Gottesman & Co., Inc.
Elof Hansson, Inc.
Lyddon & Co. (America), Inc.
Parsons & Whittemore, Inc.

Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
Pulp Sales Corp.

PULPSTONES

Norton Company

PUMPS

Allis-Chalmers Mfg. Co.
American Manganese, Steel Div.
Black-Clawson Company
Buffalo Pumps, Inc.
Byron Jackson Co.
DeLaval Steam Turbine Co.
Dorr Company
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Frederick Iron & Steel, Inc.
Gibbs-Brower Company, Inc.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Paper Converting Mch. Co.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company

RADIANT BURNERS

Red-Ray Mfg. Co., Inc.

RAG COOKING PROCESSES

Adell Chemical Co.
William Allen Son's Company
The Kinsley Chemical Company
General Dyestuff Corp.
Rohm & Haas Co.

RAG CUTTERS

Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

RECAUSTICIZING PLANTS

The Dorr Company

RECOVERY SYSTEMS

William Allen Son's Company
Babcock & Wilcox Co.
Bulkley, Dunton Pulp Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

REELS

The Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works (Kohler System)
Downingtown Mfg. Co.
Hudson Sharp Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS

Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Midwest-Fulton Machine Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS

Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Bristol Company
DeZurik Shower Company
The Foxboro Company
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
Midwest-Fulton Machine Co.
Minneapolis-Honeywell Regulator Co.
National Technical Laboratories
Shartle Brothers
Stickle Steam Specialties Co.
Taylor Instrument Companies
Wallace & Tiernan

RESEARCH CHEMISTS

Timber Engrg. Co.

RESINS

American Cyanamid Company, Industrial Chemicals Division
The Low Chemical Company
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Monsanto Chemical Company
Rohm & Haas Co., Resinous Products Div.

ROLLS

American Cast Iron Pipe Co.
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
Edward J. McBride
The Midvale Company
The Moore & White Co.
D. J. Murray Mfg. Co.
Perkins, B. F., & Sons Co.
Philbrick Engrg. Corp.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John
The Youngstown Welding & Engrg. Co.

ROLL COVERS

The Cincinnati Rubber Mfg. Co
The Goodyear Tire & Rubber Company
Edward J. McBride
Stowe-Woodward, Inc.

ROLL HANDLING EQUIPMENT

Dilts Machine Works (Kohler System).

ROLL STANDS

Cameron Machine Co.
Frank W. Egan & Co.
Moore & White Co.
Potdevin Machine Co.
John Waldron Corp.
H. G. Weber & Co., Inc.

ROPE CARRIERS

The Moore & White Co.

ROTARY BOILERS

The Biggs Boiler Works Co.

ROTARY STEAM JOINTS

Johnson Corp.
The Moore & White Co.
Perfecting Service Corp.

RUBBER PRODUCTS

The Goodyear Tire & Rubber Company

SATURANTS

American Anode Div., The B. F. Goodrich Chem. Co.

SATURATING MACHINES

Black-Clawson Company
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

SAVEALLS

Bird Machine Company
Hardinge Company

SCALES

Fairbanks, Morse & Co.
Merrick Scale Mfg. Co.
Testing Machines, Inc.
Walker-Goulard-Plehn Co.

SCREEN PLATES

Bird Machine Company
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.

SCREENS

Allis-Chalmers Mfg. Co.
American Paper Mchy. & Engrg. Works, Inc.
Appleton Wire Works
Appleton Machine Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

SHEET MACHINES

Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Suburban Machine Co.
Valley Iron Works Co.

SHOWER PIPES

Bird Machine Company
DeZurik Shower Company
Downingtown Mfg. Co.
Moore & White Co.
Sandusky Fdy. & Mch. Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

SHREDDERS

Bauer Brothers Co.
Carthage Machine Co.
Gibbs-Brower Company, Inc.

SIZING

American Cyanamid Company, Industrial Chemicals Division
Black-Clawson Company
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Glidden Company
Hercules Powder Co.
The Hubinger Co.
Monsanto Chemical Company
National Aluminate Corp.
Philadelphia Quartz Co.
Stein-Hall Co., Inc.

SIZING TESTER

W. & L. E. Gurley
Testing Machines, Inc.

SLIME CONTROL

W. A. Cleary Corp.
The Dow Chemical Company
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.
Monsanto Chemical Co.
National Aluminate Corp.
Rohm & Haas Co.

SLITTERS

Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.
Machinery & Prod. Engrg. Corp
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SMOKE STACKS

William Allen Son's Company
The Biggs Boiler Works Co.

SPECIAL MACHINERY

Dilts Machine Works.

SPLICING TISSUE

Williams-Gray Co.

SOFTNESS-STIFFNESS TESTER

W. & L. E. Gurley
Testing Machines, Inc.

SOLUBLE OILS

Adell Chemical Company
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

SOLVENTS

Adell Chemical Company

STAINLESS STEEL

American Cast Iron Pipe Co.
Armco Steel Corp.
Michigan Steel Casting Co.
The Midvale Company
U. S. Steel Corp.

STARCH

American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Clinton Industries, Inc.
The Hubinger Co.
National Starch Products Inc.
Stein-Hall Co., Inc.

STEAM JOINTS

The Moore & White Co.

STEAM SPECIALTIES

Babcock & Wilcox Co.
Cochrane Corp.
Combustion Engrg. Co., Ins.
Davis Engrg. Corp.
Johnson Corp.
Midwest-Fulton Machine Co.
Perfecting Service Corp.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

STEEL

Allegheny Ludlum Steel Corp.
Armco Steel Corp.
Carnegie Illinois Steel Co.
Lukens Steel Company
Midvale Company
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
U. S. Steel Corp.

STEEL, CLAD

Babcock & Wilcox Co.
Lukens Steel Company

STEEL TANKS

William Allen Son's Company
The Biggs Boiler Works Co.

STRAPPINGS & STRAPPING MACHINES

The Stanley Works

STUFF CHESTS

Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Midwest-Fulton Machine Co.
Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOXES

Black-Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

SUCTION UNIT

Paper & Industrial Appliances, Inc.

SULPHUR

American Cyanamid Company, Industrial Chemicals Division
Texas Gulf Sulphur Co.
Witco Chemical Company

SULPHUR BURNERS

Valley Iron Works Co.

SULPHUR DIOXIDE

American Cyanamid Co., Calco Chemical Div.
Ansul Chemical Company
Virginia Smelting Co.

SUPERCALENDERS

The Appleton Machine Co.
B. F. Perkins & Son, Inc.

SYNTHETIC LATICES

American Anode Div., The B. F. Goodrich Chem. Co.
The Goodyear Tire & Rubber Company
Nopco Chemical Co.

TACHOMETERS

The Brown Instrument Co.

TAKE-OFF UNITS

Dilts Machine Works (Kohler System).

TALC

American Cyanamid Company, Industrial Chemicals Division
W. H. Loomis Talc Corp.

TANKS

William Allen Son's Company
The Biggs Boiler Works Co
Cochrane Corp.
Kalamazoo Tank & Silo Co.
The Noble & Wood Machine Co.
B. F. Perkins & Son, Inc.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Waldron Corp., John

TEARING TESTERS

Testing Machines, Inc.

TENSILE TESTERS

B. F. Perkins & Son, Inc.
Testing Machines, Inc.

WHERE TO BUY

THICKENERS, DECKERS AND SAVEALLS
The Appleton Machine Co.
Bird Machine Company
Bulkley, Dunton Pulp Co., Inc.
Carthage Machine Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Hardinge Co., Inc.
Moore & White Co.
D. J. Murray Mfg. Co.
Oliver United Filters, Inc.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.

TIMBER ROOF TRUSS DESIGNS
Timber Engrg. Co.

TITANIUM
American Cyanamid Co., Calco Chemical Div.
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company

TOOLS
The Stanley Works
Walworth Company

TRACTOR SHOVELS
Frank G. Hough Co.

TRACTORS & TRUCKS
Frank G. Hough Co.
Towmotor Corp.
Clark Equipt. Co., Clark Tractor Div.

TRANSMISSIONS
Link Belt Company

TRAPS
Armstrong Machine Works
Cochrane Corp.
Crane Co.
Johnson Corporation
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

TUBES
Babcock & Wilcox Co.
National Tube Co.

TUBING MACHINES
Dilts Machine Works.

TUBING, MECHANICAL
National Tube Co.

TUBS
Rodney Hunt Machine Co.
Shartle Brothers
Valley Iron Works Co.

TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.

TURPENTINE RECOVERY
Foster Wheeler Corp.

UNWINDERS
Dilts Machine Works (Kohler System).

USED EQUIPMENT
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
J. J. Ross Company
Ross Paper Machy. Corp.
Shartle Brothers Machine Co.
Suburban Machine Co.

VALVES
Askania Regulator Co.
The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
Crane Company
Dilts Machine Works
The Foxboro Company
E. D. Jones & Sons Co
Magnus Metal Corp.
D. J. Murray Mfg. Co.
William Powell Co.
Record Fdy. & Mch. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Trimbey Mach. Wks.
Valley Iron Works Co.
Walworth Company

WASHERS
Bird Machine Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
Oliver United Filters
The Sandy Hill Iron & Brass Wks.
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

WASTE TREATING EQUIPMENT
Alhydro, Inc.
The Dorr Company
Hungerford & Terry, Inc.

WATER CONDITIONING
Alhydro, Inc.
Calgon, Inc.
Cochrane Corp.
General Dyestuff Corp.
Hungerford & Terry, Inc.
National Aluminate Corp.

WATER DISPERSIONS
Alhydro, Inc.
American Anode, Inc.
Rohm & Haas Co., Resinous Products Div.

WATER FINISH EQUIPMENT
Dilts Machine Works.

WATER SOFTENERS
Hungerford & Terry, Inc.

WAXES
Hercules Powder Co

WAXING MACHINERY
Black-Clawson Co.
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co.
Potdevin Machine Co.
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Dilts Machine Works (Kohler System).

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Williams-Gray Co.

WIRE BRUSHES
Williams-Gray Co.

WOOD SPLITTERS
The Appleton Machine Co.
Carthage Machine Co.

ADVERTISERS

IN THIS ISSUE

A

Appleton Wire Works, Inc. 63
Appleton Woolen Mills 51

B

Bauer Bros. Co. 59
Bird Machine Co. 11
Black-Clawson Co. 53
Bowsher Co., N. P. 51

C

Classified Advertising 52
Cowles Chemical Co. 51

D

Davis, Frank H., Co. 54
de Zurik Shower Co. 57
Dilts Machine Works 53
Dow Chemical Co. 24
Downingtown Mfg. Co. 2
Draper Brothers 45

F

Ferguson Co., H. K. 41
Ferguson, Hardy S., & Co. 50

G

General Electric Co. ..... 40 & 41
Gotesman & Co. ..... Front Cover
Gurley, W. & L. E. 58

H

Hall, Thomas W., Co. 52
Hudson Sharp Mch. Co. 49

I

Industrial Brownhurst 17

J

Jeffrey Mfg. Co. 3
Jones & Sons Co., E. D. 42

K

Kinsley Chemical Co. 51
Knox Woolen Co. 50

L

Langston, Samuel M., Co. 51
Latex Fibre Industries 37
Lobdell Co. 56
Lockport Felt Co. 51

M

Main, Charles T., Inc. 50
Mead Sales Co. 39
Michigan Steel Casting Co. 50
Monsanto Chemical Co. 43
Moore & White Co. 9

N

Nash Engineering Co. 51
National Adhesives 13
Niagara Alkali Co. 15
Northern Engrv. & Mch. Co. .. 50

O

O'Donoghue, Roderick 50
Orr Felt & Blanket Co. 8

P

Pillsbury Mills Inc. 19
Price & Pierce, Ltd. 58

R

Raymond, C. P., Service 52
Ross, J. J., Co. 55
Rust Engineering Co. 50

S

Shartle Brothers Machine Co. . 53
Sindar Corp. 50
Sirrine Co., J. E. 50
Smith & Winchester Mfg. Co. .. 47
Society of Ind. Packaging 48
Socony Vacuum Oil Co. Back Cover
Sun Oil Co. 6

T

Texas Co., The 4
Timber Engrg. Co. 46

U

U. S. Steel Corp. 35

W

West Virginia Pulp & Paper Co. 51

HUGHES PRINTING CO.
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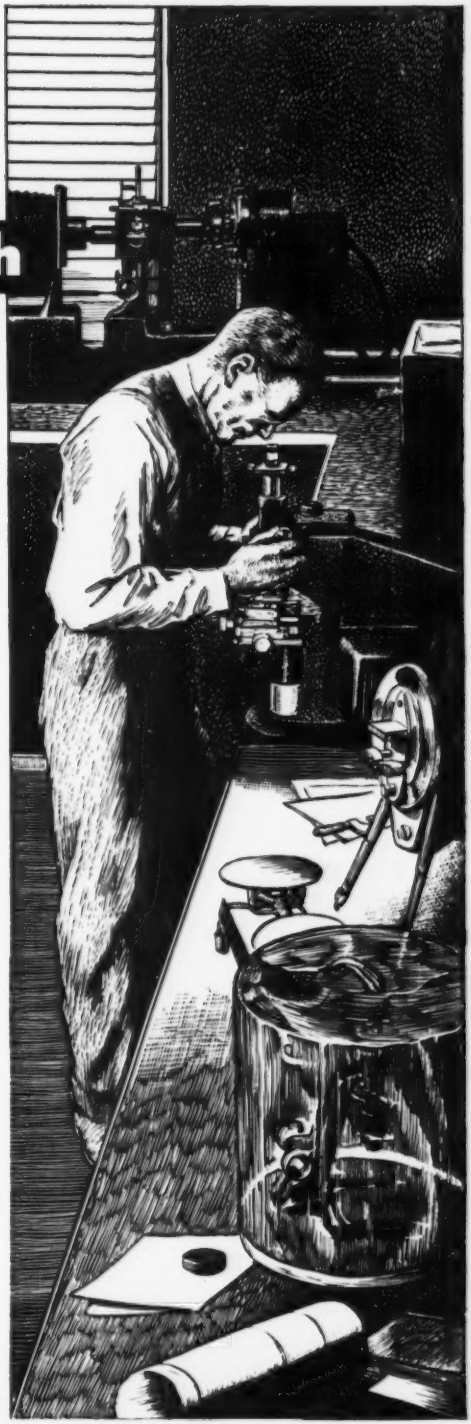

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